DR. M. MOHAN RAO
IAS (Retd)
CHAIRMAN

M. ARUNA MOHAN RAO
IPS (Retd)
DIRECTOR (ACADEMICS)

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August-2025

Current Affairs

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HISTORY & CULTURE

Indian harmonium

Context:

The Indian harmonium was recently featured in a Building Blocks science article for its unique, non-electronic design and continued relevance in Indian classical, devotional, and folk music.

About Indian harmonium:

What Is the Harmonium?

- A portable, hand-pumped reed instrument made of wood, similar in size to a suitcase.
- It produces music using air flow and metal reeds, not electricity or strings.

Musical Classification:

- Belongs to the free-reed aerophone family, related to the European reed organ.
- Prominently used in Indian classical, devotional (bhajan, qawwali), and folk traditions, as well as in theatre and cinema.
- The Indian harmonium is primarily used in Hindustani Classical Music (North Indian tradition).

How the Harmonium Works?

Air as Fuel:

- Operates through bellows pumped by hand, drawing room air through valves into a pressurised air chamber beneath the keys.

Reed Vibration Mechanism:

- Pressing a key opens a felt-lined pallet that channels high-pressure air through metal reeds, making them vibrate and produce sound.
- The pitch depends on the reed's length, thickness, and material (brass or phosphor-bronze).

Sound Generation:

- Each vibrating reed splits airflow into pulses, generating rich sound waves.
- The wooden cavity and materials like leather and cloth modify tone, creating distinctive timbre.

Key Features:

- Manual Dynamics: Volume and tone are controlled by how hard or gently the bellows are pumped, allowing for expressive dynamics like accents and fades.
- Multiple Reeds per Key: Keys can activate multiple reeds across octaves using stop rods, enriching tone like a small organ.
- Octave Coupling Mechanism: Some harmoniums allow one key to automatically depress another an octave apart, reducing finger strain.
- Weather & Tuning Adaptability: Warm air affects pitch, so musicians carry screwdrivers to fine-tune reeds pre-performance.
- No Electricity Required: Its self-contained, acoustic design allows uninterrupted performance even during power cuts or outdoor concerts.

Legacy of Chola

Context:

Prime Minister of India during the birth anniversary of Rajendra Chola I at Gangaikonda Cholapuram, highlighted the Chola dynasty's contributions to India's maritime strength, democratic systems, and cultural unity.

- He announced statues of Rajendra and Rajaraja Chola and launched a commemorative coin.

About Legacy of Chola:

Who Were the Cholas?

- The Cholas were one of the longest-ruling dynasties in South India, flourishing between the 9th to 13th century CE.
- Their empire stretched across present-day Tamil Nadu, Andhra Pradesh, Kerala, and overseas territories like Sri Lanka and parts of Southeast Asia

Key Chola Rulers and Their Contributions:

- Rajaraja Chola I (985–1014 CE):
- Strengthened naval power, built the Brihadisvara Temple at Thanjavur, and expanded the empire into Sri Lanka.

Rajendra Chola I (1014–1044 CE):

- Led expeditions to the Ganga River, built Gangaikonda Cholapuram, and extended influence to Malaysia, Indonesia, and the Maldives.

Kulottunga Chola I:

- Focused on internal administration and revenue reforms, continuing the legacy of stability.

Legacy of the Chola Dynasty:

1. Political & Administrative Legacy:

- Kudavolai System: A unique electoral practice for choosing local representatives using palm leaf ballots (Kudavolai), marking the beginning of self-governance in rural India.
- E.g. Uthiramerur inscriptions provide detailed rules for local governance and elections.
- Decentralised Village Administration: Power was devolved to Ur, Sabha, and Nagaram assemblies for land management, tax collection, and judicial functions, setting a precedent for grassroots democracy.
- Efficient Bureaucracy: Maintained a hierarchical administrative structure with clear job definitions — from ministers (Amatyas) to village accountants. Regular land surveys and revenue records (like 'Chola inscriptions') were maintained.

2. Economic & Trade Networks:

- Maritime Trade Expansion: Developed strong trade links with Southeast Asia (Srivijaya), China (Song Dynasty), and Arab regions. Chola ports like Poompuhar and Nagapattinam served as global trading hubs.
- State-Supported Commerce: State granted charters to merchant guilds like Manigramam and Ayyavole 500, encouraging overseas commerce and internal trade.
- Irrigation & Agricultural Reforms: Built large-scale tanks like Cholagangam at Gangaikonda Cholapuram, canals, and embankments, increasing agricultural surplus and sustaining temple economies.

3. Foreign Policy & Maritime Power:

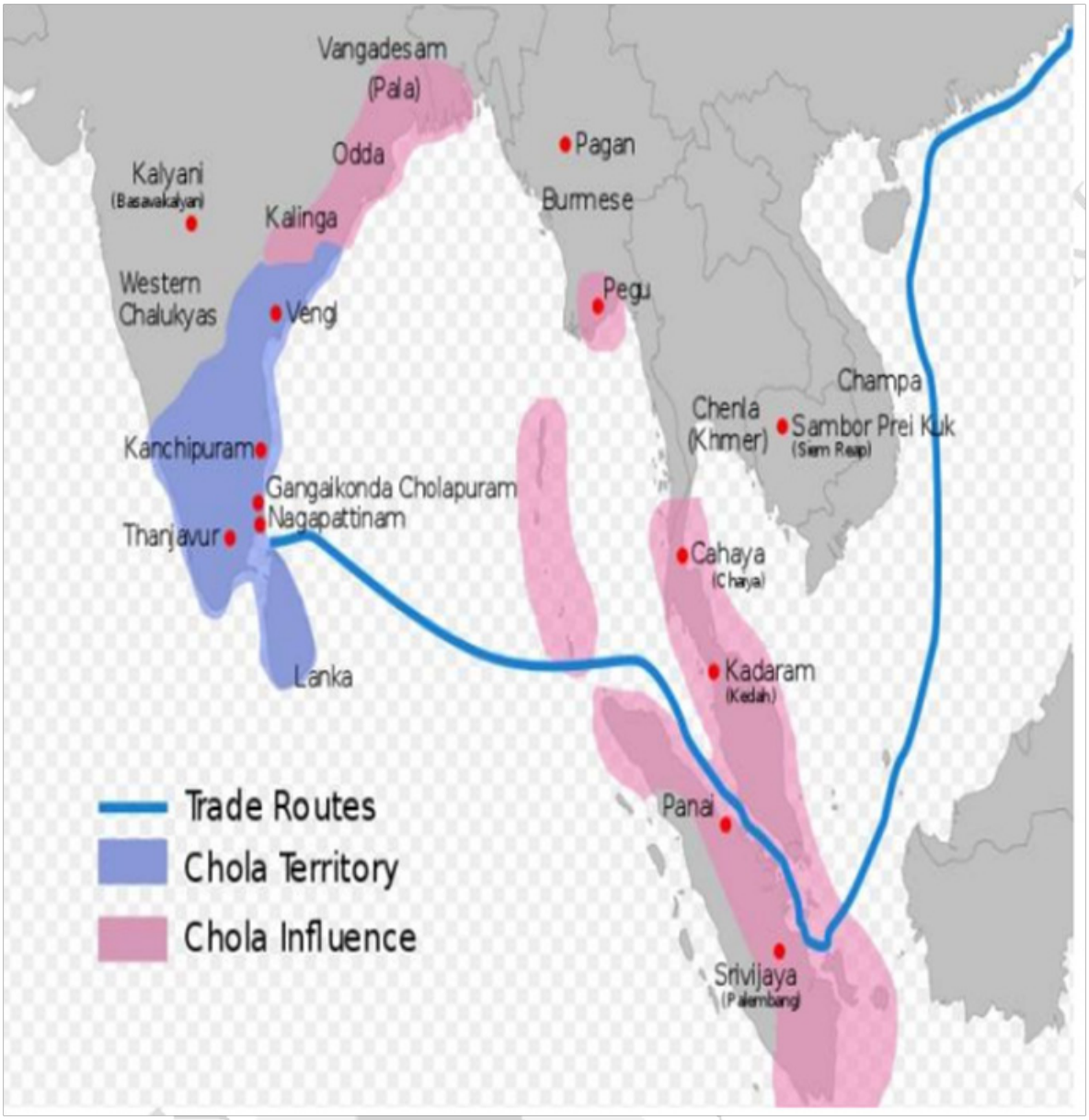
- Naval Expeditions: Rajendra Chola, I led naval campaigns across the Bay of Bengal to Sri Lanka, the Maldives, and the Srivijaya kingdom (Sumatra) — one of the earliest examples of Indian maritime assertion.
- Cultural Hegemony through Trade and Temples: Chola influence is visible in Southeast Asian temples like Angkor Wat (Cambodia) and Borobudur (Indonesia), spread via trade and temple-building traditions.
- Diplomatic Relations: Maintained embassies and diplomatic exchanges with China; Chinese chronicles record the arrival of Chola envoys in the Song court.

4. Cultural & Religious Syncretism:

- Religious Patronage: Supported both Shaivism and Vaishnavism, facilitating peaceful coexistence and growth of temples and mathas across the empire.
- E.g. Shaiva temples like Brihadisvara and Vishnu temples like Veeranarayana (Tirumangai Alvar's site).
- Temple as Socio-Cultural Centre: Temples doubled as schools (ghatikas), granaries, judicial centres, and repositories of art and dance. They were fully integrated into public life.
- Literary Flourishing: Supported Tamil poets and scholars like Kamban (Ramavataram), Ottakoothar, Jayamkondar, and Sekkizhar. Their works enriched both religious and secular Tamil literature.

5. Art & Architecture:

- Dravidian Temple Architecture: Refined the South Indian temple structure with monumental vimanas (towering sanctums), pillared mandapas, and axial alignment.
- E.g. Brihadisvara Temple (Thanjavur) and Gangaikonda Cholapuram exemplify Chola architectural zenith.
- Bronze Sculpture Excellence: Perfected the technique of lost-wax bronze casting. The Chola Nataraja (cosmic dance of Shiva) remains an iconic masterpiece of Indian art.
- Architectural Innovation: Use of granite, axial temple layouts, precision in iconometry (Shilpa Shastra), and intricate carvings set the model for later South Indian dynasties like Vijayanagar.



Decline of the Cholas:

- After 13th century, they declined due to internal conflicts, Pandya resurgence, and foreign invasions (Delhi Sultanate).
- Last remnants fell under the influence of the Vijayanagara Empire.

Relevance to Modern India

1. Decentralised Governance: Their village panchayat model mirrors modern grassroots democracy.
2. Naval Strategy: Acknowledged for maritime dominance — shaping India's Blue Economy outlook today.
3. Cultural Diplomacy: Their civilisational links with Southeast Asia reinforce Act East Policy.
4. Heritage Conservation: Temples like Brihadisvara are UNESCO World Heritage Sites.
5. National Pride: Revival of Chola legacy promotes cultural nationalism and unity in diversity.

Conclusion:

The Chola dynasty epitomises a golden age of governance, maritime excellence, and cultural vibrance. Their administrative foresight and artistic legacy offer India a historical blueprint to harmonise modern development with civilisational pride.

Rajendra Chola I

Context:

India is commemorating 1,000 years of Rajendra Chola I's Southeast Asian expedition through cultural events and heritage projects.

About Rajendra Chola I:

Who he was?

- Rajendra Chola I (1014–1044 CE) was the most powerful emperor of the Chola dynasty, succeeding his father Rajaraja Chola I. He expanded the Chola Empire from South India to the Ganga in the north and deep into Southeast Asia through a historic naval expedition in 1025 CE.

Historical Background:

- Son of Rajaraja Chola I, he ruled the Chola Empire from 1014 to 1044 CE.
- Inherited a strong military state and expanded it into a maritime empire.
- Established the capital Gangaikonda Cholapuram to mark his conquest of northern India.

Achievements and Contributions:

Military & Maritime Expansion:

- Led a naval expedition in 1025 CE to defeat the Srivijaya empire, asserting trade control over the Malacca Strait.
- Extended Chola influence across India, Sri Lanka, Maldives, and Southeast Asia including Thailand, Indonesia, Cambodia, Malaysia.
- Defeated the Pala dynasty of Bengal, symbolized by the title "Gangaikondachola" (Conqueror of the Ganga).

Art & Architecture:

- Built the Gangaikonda Cholapuram temple, a Dravidian architectural marvel similar to the Brihadeeswara Temple.
- Promoted stone inscription records, temple murals, and bronze sculpture traditions.
- The temple reflects Chola craftsmanship and urban planning precision.

Engineering & Water Management:

- Constructed the Cholagangam Tank, a man-made lake with advanced sluice and sediment control—irrigating over 1,500 acres.
- The tank system reflected ecological foresight and hydraulic engineering expertise.

Cultural Diplomacy & Trade:

- Supported merchant guilds like Manigramam and Ayyavole, enabling trade with Southeast Asian ports.
- Encouraged Tamil diaspora settlement, temple-building, and local alliances abroad—building soft power centuries before the modern concept emerged.

Administrative Legacy:

- Strengthened village assemblies (sabhas) and temple-based revenue systems.
- Codified land grants, irrigation records, and social welfare measures through detailed inscriptions.

Paika Rebellion

Context:

NCERT's latest Class 8 history textbook has omitted the Paika Rebellion of 1817, triggering political backlash in Odisha.

About Paika Rebellion:

What Was the Paika Rebellion?

- The Paika Rebellion (Paika Bidroha) was a large-scale armed uprising against British colonial rule in 1817, led by Bakshi Jagabandhu in Odisha—decades before the 1857 Revolt.

Region Involved:

- Core area: Khurda district, Odisha.
- Spread: Puri, Banpur, Ghumusar, and parts of tribal Odisha.

Key Causes of the Revolt:

- Loss of Hereditary Land: British land reforms removed Paikas' rent-free land grants.
- Cultural Disruption: Rejection of Odia kingship and destruction of Barunei Fort.
- Economic Exploitation: New currency policies and tax demands crushed locals.
- Salt Monopoly: British salt trade restricted hill communities' livelihood.
- Peasant-Tenant Conflict: Rising pressure from absentee Bengali landlords worsened tribal discontent.

Main Features of the Revolt:

- Leadership: Led by Bakshi Jagabandhu, a former commander of Khurda's king.
- Participation: Involved Paikas, Kondhs, peasants, and tribal groups.
- Attacks: Targeted police stations, treasuries, and British symbols of power.
- Scale: Covered multiple districts and continued for months.
- Tactics: Combined guerrilla raids with open armed confrontation.

Outcome of the Rebellion:

- Suppressed by British: The revolt was brutally put down by Company forces.
- Jagabandhu in Exile: Went underground till his negotiated surrender in 1825.
- Symbol of Resistance: Later emerged as a cultural and political symbol of Odia pride and anti-colonial resistance.

Significance:

- Claim as First War of Independence: Odisha government proposed it as the first such war, predating 1857.

Marungur Excavation

Context:

The Tamil Nadu State Department of Archaeology (TNSDA) has completed the Marungur excavation in Cuddalore district, unearthing a habitation-cum-burial site dating from the Iron Age to Early Historic Period.

About Marungur excavation:

What it is?

- A multidisciplinary archaeological excavation aimed at uncovering prehistoric settlements and burial systems spanning the Iron Age to Early Historic period, led by the TNSDA.
- Location: Located in Panruti taluk, Cuddalore district, Tamil Nadu, between the Thenpennai and Vada Vellar rivers, part of the ancient Naduvil Mandalam

Key Features:

- Habitation mound & burial site: Both components found together — rare for Tamil Nadu.
- Artifacts: 95 items including Tamil-Brahmi potsherds, terracotta ware, microliths, beads, bone tools, conch shells, iron implements, antimony rods, and Chola-era coins.
- Advanced techniques: Used UAV mapping, LiDAR, AMS carbon dating, and phytolith analysis for precise chronology.
- Burial system: Megalithic urn burials with concentric laterite stone circles, grave goods, iron swords, and jasper beads.
- Stratified excavation: Trench layers showed clear anthropogenic activity up to 6 m, revealing continuous occupation.

Significance:

- Chronological breakthrough: Sheds light on the transition from Iron Age to Early Historic life in Naduvil Nadu.
- Epigraphic value: Rare Tamil-Brahmi inscriptions found on grave pots — among the earliest scripts in Tamil Nadu.
- Cultural evolution: Offers evidence of urban settlement patterns, trade links (Arikamedu, Poompuhar), and burial rituals.

Gaden Phodrang Trust

Context:

The 14th Dalai Lama declared that the Gaden Phodrang Trust would be the sole authority to recognize his reincarnation, reaffirming his earlier 2011 statement.

- This announcement precedes his 90th birthday and reiterates Tibetan Buddhist autonomy in succession matters.

About Gaden Phodrang Trust:

Definition & Origin:

- The term 'Gaden Phodrang' originally referred to the Dalai Lama's residence at Drepung Monastery in Lhasa, Tibet. It evolved into the institutional base of the Dalai Lama lineage.
- Location & Registration: The Gaden Phodrang Trust is a registered non-profit body based in Dharamshala, India, formed in 2011. It functions out of the Dalai Lama's office.
- Leadership & Members: The Trust is chaired by His Holiness the Dalai Lama and is managed by close aides, including Prof. Samdhong Rinpoche, a senior monk and former Prime Minister (Kalon Tripa) of the Central Tibetan Administration.

Brief History and Mandate:

- Historical Role: From the 17th century, Gaden Phodrang emerged as both the spiritual and political seat of the Dalai Lama in Tibet, continuing until the 14th Dalai Lama's exile in 1959.
- Post-1959 Transformation: After relocating to India, the Gaden Phodrang transitioned from a government to a spiritual trust, adapting to Tibetan exile needs and Buddhist institutional continuity.
- Registered Purpose (2011): The Trust was specifically established to oversee the recognition of future Dalai Lama reincarnations, safeguarding religious traditions from political interference.

Key Functions of Gaden Phodrang Trust:

- Recognition of Reincarnation: It holds the exclusive authority to identify and validate the 15th Dalai Lama and future successors as per Tibetan Buddhist traditions.
- Cultural Preservation: Promotes Tibetan spiritual heritage, including rituals, teachings, and lineage practices.
- Institutional Governance: Coordinates closely with other Tibetan institutions like the Dalai Lama Trust (New Delhi) and the Gaden Phodrang Foundation (Zurich) for charitable and outreach activities.
- Protection from External Influence: Reinforces religious sovereignty against external (notably Chinese) attempts to interfere in succession matters.

How the Trust Selects the Dalai Lama?

- The process of identifying a reincarnated Dalai Lama is deeply spiritual and rooted in Tibetan Buddhist tradition.
- The Trust, under the Dalai Lama's instructions, guides this process through:
- Spiritual signs and visions observed before and after the Dalai Lama's death.
- Consultation with high-ranking lamas and oracles.
- Possible divinations and rituals conducted at sacred sites.
- The final decision is endorsed solely by the Gaden Phodrang Trust, ensuring doctrinal integrity.

GI Tag Issue – Kolhapuri Chappal

Context:

Luxury brand Prada showcased Kolhapuri chappal-inspired footwear in Milan (June 2025), triggering a debate on cultural misappropriation of India's GI-tagged heritage products.

About GI Tag Issue – Kolhapuri chappal:

What is a GI Tag?

- A Geographical Indication (GI) is a form of intellectual property right used to identify products that originate from a specific location and have unique qualities, reputation, or characteristics tied to that place.

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Established Under:

- The Geographical Indications of Goods (Registration and Protection) Act, 1999, which came into force in 2003 following India's TRIPS obligations.

Objective:

- To legally protect regional goods, prevent unauthorised usage, support rural artisans and farmers, and enhance the global visibility of traditional products.

Key Features:

- Public Property: GI belongs to producer groups or communities, not individuals or firms.
- Non-Transferable: Cannot be sold or licensed like trademarks.
- 10-Year Protection (Renewable): GI tags are valid for 10 years and can be renewed indefinitely.
- Cultural Linkage: Protects traditional skills, knowledge, and identity of regions.
- Legal Enforcement: Prohibits unauthorised use and provides penalties for infringement.

Recent Issue: Kolhapuri Chappals Misused by Prada

- Prada's Spring/Summer 2026 collection showcased footwear closely resembling GI-tagged Kolhapuri chappals.
- Despite the GI tag in India, no automatic international GI protection exists, highlighting the territorial limitations of GI laws.

Shortcomings of the GI Regime:

- No Global GI Protection: GI rights are territorial, and there is no universal GI law to prevent misuse abroad.

- Weak Enforcement: Cross-border infringements like Prada or Basmati cases show limited legal recourse internationally.
- Lack of Awareness: Many producer communities remain unaware or under-supported to enforce their rights.
- Database Gaps: No centralised global searchable GI database, making brand due diligence difficult.
- Slow Recognition Process: Registration and recognition of GIs in other jurisdictions is often costly and time-consuming.

Historical Examples of Misappropriation

- Basmati Patent Case (1997): US firm Ricetec tried to patent rice lines; India successfully contested it.
- Turmeric Patent (1995): Revoked after CSIR proved prior traditional use.
- Neem Case (2000): European patent on neem-based antifungal use cancelled due to prior knowledge in Ayurveda

Significance of GI Tags:

- Cultural Preservation: Safeguards traditional craftsmanship and community knowledge systems.
- Economic Upliftment: Enhances rural income by allowing local producers to command premium prices.
- Consumer Confidence: Offers authenticity assurance and deters counterfeit markets.
- Boosts Exports & Tourism: Darjeeling Tea, Pashmina, and Mysore Silk are globally recognised brands thanks to GI status.
- Supports Self-Reliance: Aligns with Aatmanirbhar Bharat by empowering local production ecosystems.

Conclusion:

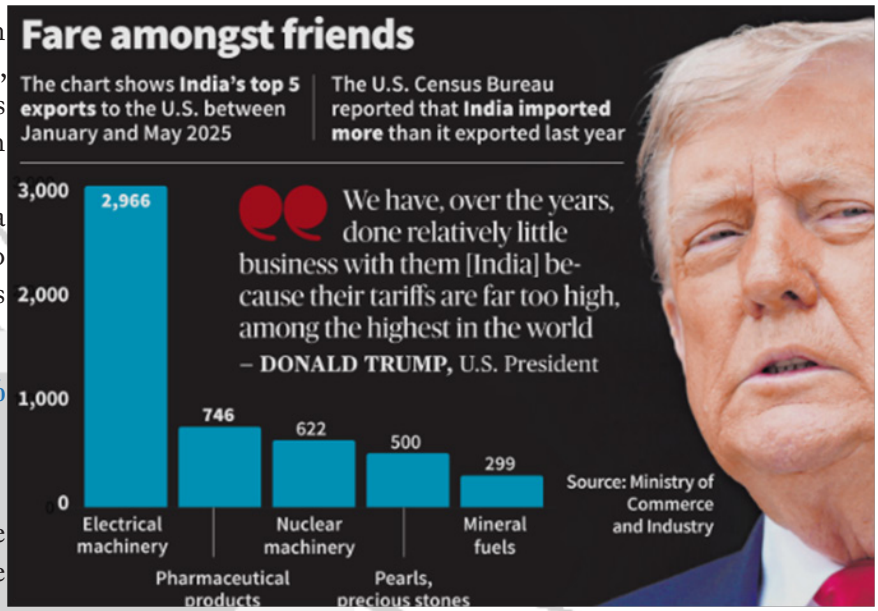
GI tags are vital in preserving cultural heritage, promoting indigenous economies, and ensuring global brand identity. However, international enforcement gaps limit their effectiveness against cultural misappropriation. A multilateral GI framework, community awareness, and global recognition are essential to safeguard India's traditional legacy.

U.S. President announced a 25% tariff on Indian imports

Context:

U.S. President announced a 25% tariff on Indian imports effective August 1, 2025, citing high trade barriers and India's continued energy and defence ties with Russia.

- The announcement includes a Russia-related penalty, linked to the proposed Russian Sanctions Act 2025.



About U.S. President announced a 25% tariff on Indian imports:

What it is?

- A 25% import tariff on all eligible goods shipped from India to the U.S.
- Additional penalty tariffs for India's continued oil and defence trade with Russia.

Objective Behind the Tariff:

- Address Trade Imbalance: To pressure India into reducing its tariffs and removing non-tariff barriers.
- Punish Russia-Aligned Trade: To dissuade India from continuing energy imports from Russia amid Ukraine war sanctions.
- Push for Bilateral Deal: To hasten conclusion of a "fair and reciprocal" India–U.S. trade agreement.

Key Features of the Announcement

- Trade War Rhetoric: Trump called India's trade policies "obnoxious" and blamed high tariffs and opaque rules.
- Linked to Russia Sanctions Act: The Russia Sanctions Act 2025, under U.S. legislative review, threatens up to 500% duties on nations trading oil with Russia.
- Preceded by Negotiation Failure: The tariff follows the fifth round of failed trade talks between India and the U.S. in Washington.
- Past Suspension Now Revoked: A previously suspended 26% tariff (April 2025) is now being reinstated in a harsher form.
- India's Response: India's Ministry of Commerce stated it is reviewing the situation and remains committed to protecting farmers, MSMEs, and entrepreneurs.
- India cited recent FTA with the UK as an example of its fair-trade intent.

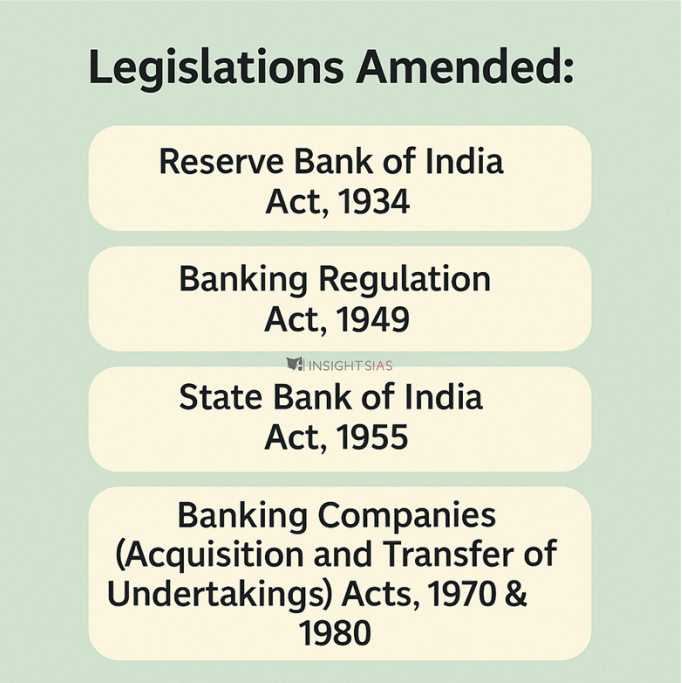
Significance for India:

- Export Sector Impact: India's exporters may lose competitiveness in the U.S. market, especially in textile, pharma, and engineering sectors.
- Bilateral Strain: The move could derail progress on the India-U.S. trade agreement, and weaken diplomatic synergy in Quad and Indo-Pacific engagements.
- Strategic Autonomy Challenge: India's multi-alignment policy—especially its Russia ties—faces growing pressure from Western trade-linked coercion.

The Banking Laws (Amendment) Act, 2025

Context:

The Banking Laws (Amendment) Act, 2025 will come into effect from 1st August 2025, introducing reforms to bank governance, audit transparency, depositor protection, and cooperative bank regulation.



About The Banking Laws (Amendment) Act, 2025:

What Is It?

- A comprehensive reform law notified by the Ministry of Finance, the Act amends 5 key legislations governing the Indian banking sector to improve governance, transparency, and depositor safety.

Key Objectives:

- Strengthen bank governance mechanisms.
- Ensure depositor and investor protection.
- Enhance audit quality in public sector banks (PSBs).
- Align cooperative bank rules with constitutional standards.

Key Features of the Act

1. Redefining 'Substantial Interest' Threshold:

- The limit for 'substantial interest' in banks is revised from 5 lakh to 2 crore.
- This modernizes outdated thresholds (unchanged since 1968) to reflect inflation and sectoral growth.

2. Reforming Director Tenures in Cooperative Banks:

- Tenure raised from 8 to 10 years (excluding chairperson & full-time directors), in sync with the 97th Constitutional Amendment.

3. Unclaimed Assets to Investor Education and Protection Fund (IEPF):

- PSBs can now transfer unclaimed shares, interests, and bond redemptions to IEPF.
- This aligns PSBs with norms under the Companies Act, ensuring efficient fund recycling.

4. Audit Transparency and Independence:

- PSBs are empowered to determine remuneration for statutory auditors, promoting better audit quality and enabling engagement of top-tier professionals.

5. Streamlining Statutory Reporting:

- Reporting timelines to RBI are revised from "every Friday" to end-of-fortnight/month/quarter, easing operational burden and improving data relevance.

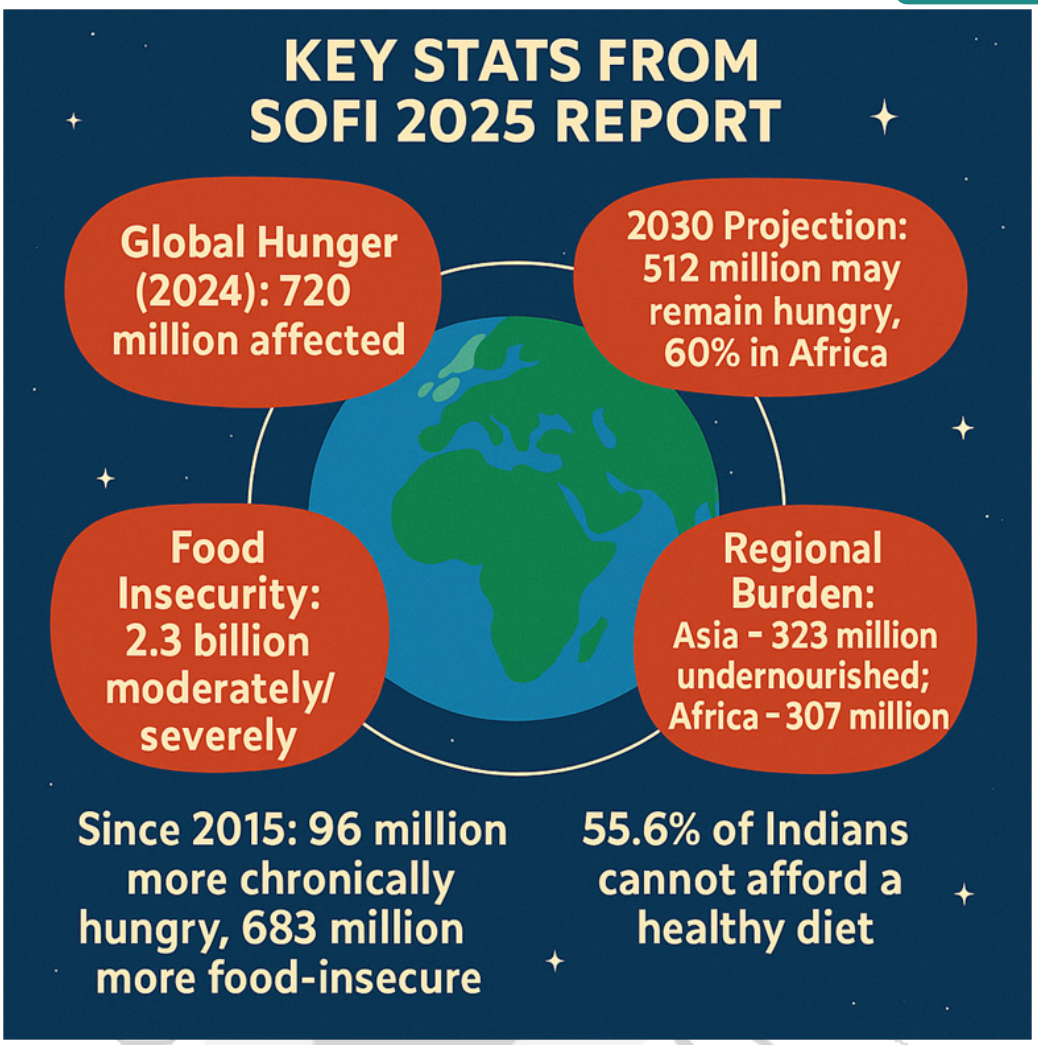
Significance for Indian Banking Sector:

- Modernizes Regulatory Norms: Updates 50-year-old provisions to match current financial realities.
- Improves Cooperative Bank Accountability: Aligns tenure rules with constitutional mandates for democratic functioning.
- Strengthens Depositor Confidence: By securing unclaimed assets and improving audit standards.

State of Food and Nutrition in the World' (SOFI) 2025 report

Context:

The UN's State of Food and Nutrition in the World' (SOFI) 2025 report revealed that 8.2% of the global population — around 720 million people — were affected by chronic hunger in 2024.



About State of Food and Nutrition in the World' (SOFI) 2025 report:

- Published by: FAO, WFP, IFAD, WHO, and UNICEF.
- Purpose: Tracks global progress on SDG 2 — zero hunger & malnutrition eradication.
- 2025 Focus: Post-COVID recovery, food affordability, regional inequalities, and projection till 2030.

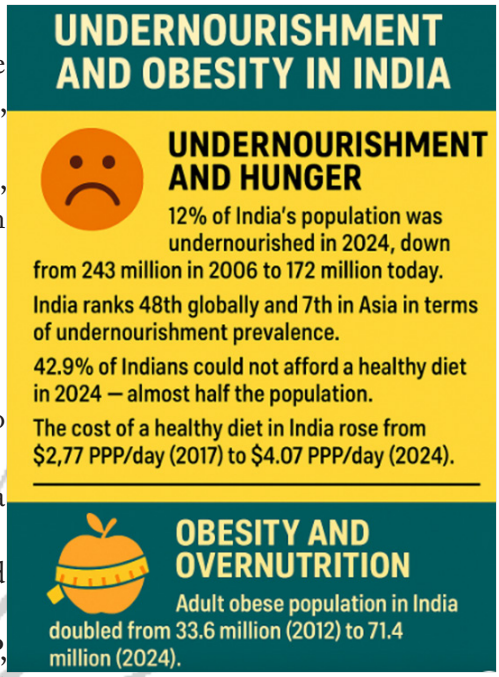
Key Features of SOFI 2025 Report:

- Global Underperformance: Despite marginal improvements, global hunger levels in 2024 remain above pre-pandemic benchmarks, jeopardising the 2030 SDG-2 target.
- Regional Disparities: Africa, though home to fewer people than Asia, sees over 20% of its population undernourished, reflecting stark regional imbalances.
- Asia's Burden: Asia continues to host nearly half of the world's food-insecure population due to sheer numbers, despite modest regional improvements.
- Southeast Progress: Countries in Southeast Asia and South America registered slight declines in hunger, driven by social protection and agri-nutrition reforms.
- Diet Affordability: Over 3 billion people globally are unable to afford a healthy diet, pushing them toward calorie-dense but nutrient-poor options.
- Climate & Conflict Linkages: Ongoing wars and climate events like droughts and floods remain primary catalysts for hunger post-2020.
- Sluggish Recovery: Only a 65 million decline in undernourishment is projected by 2030—nowhere close to the 'zero hunger' ambition.

India and SOFI 2025 Report:

- Affordability Crisis:6% of India's population cannot afford a nutritious diet, indicating a failure in food access despite surplus grain stocks.
- Rural–Urban Divide: Urban food access has improved due to income recovery, while rural India suffers due to PDS inefficiencies and price volatility.

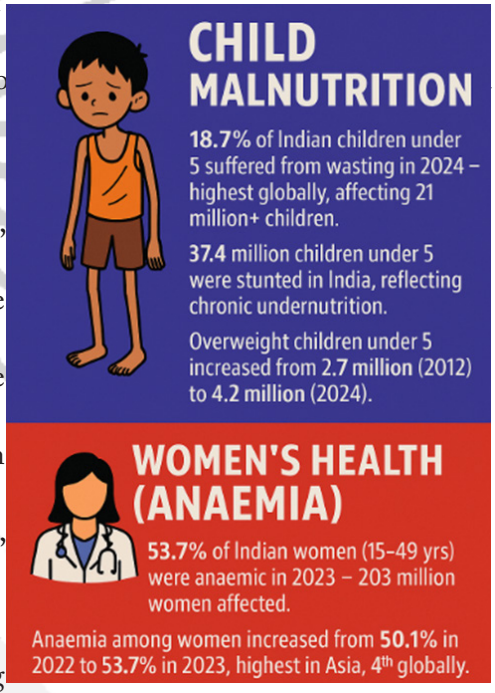
- Child Malnutrition: India still ranks among the highest in child stunting and wasting, indicating persistent early-age nutritional failure.
- Hidden Hunger: Micronutrient deficiencies remain rampant due to cereal-heavy diets with inadequate intake of fruits, vegetables, and proteins.
- Policy Shift Needed: Experts demand inclusion of millets, pulses, and fortified foods into public schemes to tackle undernutrition holistically.



Analysis of Report:

Positive Developments:

- Global Gains: Hunger prevalence declined from 8.7% (2022) to 8.2% (2024), showing slow but visible improvement.
- Regional Recovery: Progress in Southeast Asia and Latin America offers hope for replicable best practices in targeted interventions.
- Diet Awareness: Governments and civil society have amplified focus on diet quality and nutrition education globally.
- Institutional Convergence: The collaboration of FAO, WFP, IFAD, WHO, and UNICEF fosters comprehensive, multi-sectoral responses.
- Data Systems: Hunger mapping and nutrition tracking technolo interventions.



Negative Trends:

- Post-COVID Setback: The pandemic reversed a decade of gains, leaving 96 million more people hungry than in 2015.
- Africa's Challenge: By 2030, 60% of global undernourished will be in Africa, highlighting the urgency for continental support.
- SDG Drift: With just a 65 million projected decline by 2030, the pace is too slow to meet global targets.
- Inequality Spike: The cost of healthy food has risen disproportionately, hurting low-income groups most severely.
- Persistent Undernourishment: Despite surplus global production, equitable distribution remains a major bottleneck.

Way Ahead:

- Nutrition-centric PDS: Revamp India's food system by adding diverse, locally grown, and nutrient-rich foods into subsidised channels.
- Diversify Agriculture: Move beyond rice-wheat dominance to include millets, pulses, and horticulture to improve dietary balance.
- Resilient Food Systems: Invest in region-specific, climate-adaptive food systems to enhance food security and reduce disaster-linked hunger.
- Global Coordination: Support Africa and South Asia through climate finance, food aid, and region-focused SDG cooperation.
- Improve Affordability: Align food prices with income growth via minimum wages, inflation targeting, and better supply chains.

Conclusion:

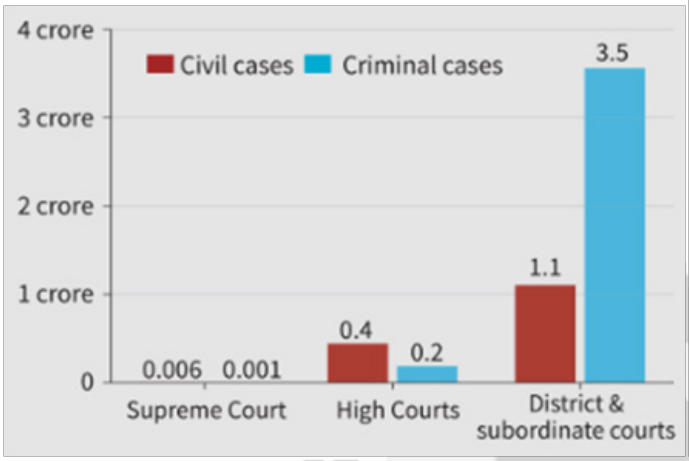
The SOFI 2025 report serves as a reality check on SDG-2, highlighting the growing gap between commitments and outcomes. For India, tackling hidden hunger and diet affordability must be policy priorities. True food security lies not in quantity alone but in nutrition and equity.

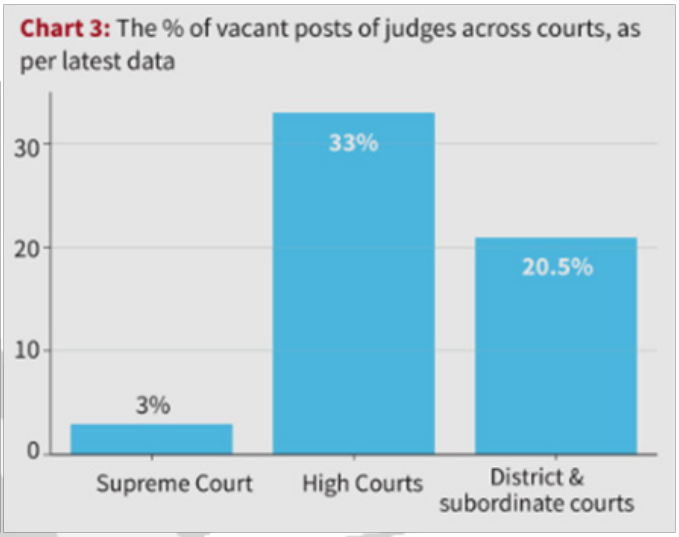
Pendency in Indian Courts

Context:

India's judiciary faces a pendency crisis with over 5 crore cases across Supreme Court, High Courts, and District Courts.

- President of India previously highlighted the issue as "Black Coat Syndrome," indicating rising public distrust due to delayed justice.





About Pendency in Indian Courts:

Current Status

- Pending Cases: 4.6 crore in District Courts, 63.3 lakh in High Courts, 86,700 in Supreme Court.
- Judicial Strength Deficit: India operates with just 15 judges per 10 lakh population vs. Law Commission's 50.
- Civil vs. Criminal Delay: Only 38.7% civil cases are disposed within a year in district courts vs. 70.6% for criminal cases.
- Vacancy Crisis: 5,665 judge positions vacant across courts; only 79% of sanctioned strength filled.

Key Causes of Judicial Pendency

1. Judge Vacancy Crisis:

- Judiciary operates at 79% capacity.
- 5,665 posts vacant out of 26,927 sanctioned.
- Only 15 judges per 10 lakh population, far below the Law Commission's 1987 norm of 50 judges per 10 lakh.

2. Disproportionate Civil Delays:

- Only 38.7% of civil cases in district courts resolved within a year.
- 20% stretch beyond 5 years, mainly in property, family, or contract disputes.

3. Lack of Timelines and Monitoring:

- No statutory deadlines for filings, hearings, or witness examination.
- Frequent adjournments and fragmented case scheduling.

4. Weak Infrastructure and Staffing:

- Inadequate courtrooms, administrative support, and digital tools.
- High judge-to-case and judge-to-population ratios at the subordinate level.

Government Initiatives:

1. e-Courts Mission Mode Project:

- 18,735 courts digitised; 99.4% WAN coverage; 3,240 court–jail video links.
- Phase-III (7,210 crore) envisions paperless, unified judicial platform.

2. Judicial Infrastructure Scheme:

- Court halls rose from 15,818 (2014) to 23,020 (2024); 11,167 crore invested.

3. Appointment Reforms:

- 976 High Court judges and 62 Supreme Court judges appointed since 2014.
- District judiciary strength increased to 25,609.

4. Fast Track and Special Courts:

- 866 FTCs and 755 POCSO-special courts functional.
- 2.53 lakh sensitive cases disposed.

5. ADR Mechanisms:

- Lok Adalats: 27.5 crore cases resolved since 2021.
- Mediation Act, 2023: Institutionalises pre-litigation mediation.
- Arbitration Acts: Strict timelines to resolve commercial disputes.

6. Tele-Law & Pro Bono Legal Services:

- 90 lakh beneficiaries via Tele-Law.
- 11,000 pro bono lawyers under Nyaya Bandhu; legal clubs in 89 law schools.

Way Forward:

Judicial Capacity Expansion:

- Increase sanctioned strength: Augment judge-to-population ratio to reduce workload and ensure timely hearings.
- Fast-track appointments & reform collegium: Introduce transparent and inclusive selection with timelines to fill vacancies swiftly.

Digital Justice Delivery:

- Scale up e-courts & AI tools: Use technology for virtual hearings, e-filing, and automated scheduling to cut delays.
- Implement FASTER system: Enable real-time digital transmission of orders to reduce procedural delays in bail and urgent cases.

Alternate Dispute Resolution Push:

- Mandatory mediation: Make pre-litigation mediation compulsory in civil and commercial cases to avoid unnecessary trials.
- Train certified mediators: Develop a national pool of skilled ADR professionals for effective and quick resolution.

Specialised Benches:

- Create domain-specific courts: Set up dedicated benches for environment, tax, IPR, and cyber law to improve expertise and speed.

Public-Centric Legal Access:

- Expand legal aid tools: Increase reach of Tele-Law, mobile clinics, and regional language judgments for rural justice access.
- Promote legal awareness: Introduce legal literacy via school curriculum, court streaming, and public engagement programs.

Conclusion:

Timely and affordable justice is central to constitutional governance. India's judicial backlog reflects deep structural challenges — but with sustained reforms, technology adoption, ADR mechanisms, and institutional transparency, the judiciary can emerge as a pillar of accessible democracy, not a symbol of delay.

NEP@5: Five Years of National Education Policy 2020

Context:

The National Education Policy (NEP) 2020 has completed 5 years since its launch on 29th July 2020. the policy has seen some classroom-level implementation but continues to face delays due to institutional hurdles and Centre–State disagreements.

About NEP@5: Five Years of National Education Policy 2020:

Key Provisions of NEP 2020:

1. New School Structure (5+3+3+4): Replaces the 10+2 model with a learning-focused framework from ages 3–18. E.g., preschool (3–6 years) is now formally integrated into schooling.
2. Foundational Literacy & Numeracy (FLN): NIPUN Bharat aims to ensure all students attain basic literacy and numeracy by Class 3.

E.g., PARAKH surveys monitor progress.

1. Multilingual Education: Promotes mother tongue/regional language as the medium till Grade 5, supporting cognitive development.
2. Flexible Undergraduate Education: Introduces multiple entry-exit options, Academic Bank of Credits (ABC), and multidisciplinary courses.

3. Common Entrance Test (CUET): National-level admission test for UG courses to ensure fairness and eliminate multiple exams.
4. Teacher Training Overhaul: National Professional Standards for Teachers (NPST) and integrated B.Ed programmes to improve quality.
5. Equity & Inclusion: Focus on SC/ST/OBC, minorities, women, and NE states; expansion of scholarships and language access.
6. Regulatory Reform – HECI Proposal: Plans to replace UGC, AICTE with one umbrella regulator — Higher Education Commission of India.
7. Digital and Adult Education Push: Enhancing online learning, MOOC recognition, and aiming for 100% youth/adult literacy.
8. Increase Education Spending to 6% of GDP: Targets higher public investment in both school and higher education sectors.

Achievements in the Last 5 Years:

- Surge in Enrolment & Inclusivity: Higher education enrolment rose to 4.46 crore and SC, ST, Muslim, and NE students saw 36–75% growth.

  E.g. Female PhD enrolment doubled to 1.12 lakh, showing gender and regional inclusion.
- Early Childhood Education Gains: Over 1.1 crore enrolled in Balvatikas; 4.2 crore children entered 'Vidya Pravesh' readiness modules.

  E.g. ECCE linked to play-based and language-diverse kits like Jaadui Pitara.
- Foundational Literacy Drive (NIPUN Bharat): ASER 2024: 23.4% Class III students read Grade II text vs 16.3% in 2022 and arithmetic gains also visible.
- Credit Flexibility and ABC Rollout: 32 crore Academic Bank of Credit (ABC) IDs created and 2,556 institutions onboarded.
- Internationalisation & CUET Success: CUET adopted widely, reducing coaching race; IIT/IIM campuses opened in Dubai, Zanzibar.

Challenges in Implementation:

- Federal Tensions and Policy Pushback: States like Tamil Nadu, Kerala oppose PM SHRI and 3-language formula citing centralisation.
- Slow Institutional & Legal Reforms: HECI Bill still pending; Board exam reform (2 attempts/year) yet to scale.
- Teacher Training and Curriculum Delay: National Curriculum Framework for Teacher Education (NCFTE) not released.
- Poor Exit–Entry Uptake Despite Credits: Only ~31,000 UG and ~5,500 PG students used the ABC system till 2025.
- Infrastructure and Digital Access Gaps: Many rural schools lack digital tools, trained staff, or early-grade resources.

Way Forward:

- Centre–State Synergy and Localisation: Adapt NEP flexibly via contextual MoUs, capacity-building, and decentralised reforms.
- Strengthen Foundational & ECCE Systems: Upgrade Anganwadis, align ECCE–school pedagogy, and scale training modules.

  E.g. Expand Jaadui Pitara and Vidya Pravesh under NIPUN Bharat.
- Operationalise HECI & Regulatory Unification: Fast-track the Higher Education Commission of India Bill for unified oversight.

  E.g. Merge NHERC, NAC, GEC, and HEGC for standardised regulation.
- Expand Awareness of Credit & Digital Frameworks: Launch outreach drives in universities for ABC/NCrF uptake and reduce dropouts.
- Promote Equity, Research & Financing Models: Set up caste–gender dashboards and support regional language content and blended finance.

Conclusion:

The NEP 2020 has made visible progress in enrolment, foundational learning, and institutional flexibility. Yet, policy bottlenecks, digital divides, and centre–state friction slow its full potential. A calibrated push for inclusive, locally-adapted, tech-integrated reforms can turn vision into ground reality.

Internal Complaints Committee (ICC)

Context:

The tragic self-immolation of a student in Odisha, allegedly after her sexual harassment complaint was dismissed by her college's Internal Complaints Committee (ICC), has triggered nationwide scrutiny.

About Internal Complaints Committee (ICC):

What is the ICC?

- An Internal Complaints Committee (ICC) is a mandatory institutional redressal mechanism created under the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 (POSH Act) to address complaints of sexual harassment at the workplace.

Legal Basis & Background:

- Evolved from Vishaka Guidelines (1997) by the Supreme Court, following the Bhanwari Devi case.
- Formalised by the POSH Act, 2013, post the Nirbhaya case.
- Made mandatory for all workplaces with more than 10 employees.
- For smaller or informal sectors, Local Complaints Committees (LCCs) operate at the district level.

Objectives of the ICC:

- Prevent and redress sexual harassment at the workplace.
- Create a safe, inclusive, and gender-just work environment.
- Ensure fair and confidential grievance redressal.
- Empower women to report violations without fear of reprisal.

Key Features and Functions:

- Composition: Presided over by a senior female employee, at least half the members must be women, and one must be from an NGO or have legal/social expertise.

- Jurisdiction: Can receive complaints within 3 months of the incident and initiate conciliation or inquiry proceedings.
- Quasi-judicial Powers: Can summon witnesses, gather evidence, and recommend disciplinary or legal action.
- Timely Inquiry: Must complete inquiry within 90 days, and submit recommendations within 10 days thereafter.
- Confidentiality Mandate: All proceedings, identities, and outcomes are confidential under Section 16 of the Act.

Significance of ICCs:

- Ensures institutional accountability in safeguarding women's rights.
- Acts as a deterrent against power abuse and harassment in hierarchal workplaces.
- Empowers women with a legal and secure grievance forum.
- Promotes compliance culture and strengthens India's commitment to gender justice.

National Sports Governance Bill, 2025

Context:

The Central Government introduced the National Sports Governance Bill, 2025 in the Lok Sabha to overhaul India's sports administration framework.

- It aims to replace the 2011 Sports Code with a legally enforceable, athlete-centric governance system, bringing bodies like BCCI under its ambit.

Difference Between National Sports Code 2011 and Sports Governance Bill 2025

Aspect	Sports Code, 2011	Sports Governance Bill, 2025
Legal Status	Executive guideline	Statutory legislation
Enforceability	Non-binding; advisory in nature	Legally enforceable via tribunals
Representation	No mandatory gender/athlete quota	Mandatory 4 women & 2 elite athletes
BCCI Regulation	Operated outside its purview	Brought under NSF governance net
Dispute Resolution	No dedicated mechanism	National Sports Tribunal set up
Election Monitoring	Handled by Ministry	Independent National Sports Election Panel

About National Sports Governance Bill, 2025:

What is the National Sports Governance Bill, 2025?

- The National Sports Governance Bill, 2025 is a landmark legislation aiming to ensure transparency, fairness, and accountability in National Sports Federations (NSFs). It introduces legal safeguards for athletes, standardized elections, grievance redressal, and institutional oversight.

Key Features of the Bill:

- Legal Status to Governance Norms: Converts previously executive guidelines into binding law, ensuring enforceability across NSFs and sports bodies.

- BCCI Under Governance Framework: BCCI to be recognized as an NSF, requiring annual recognition and resolution of all disputes through the National Sports Tribunal.

Statutory Institutions Introduced:

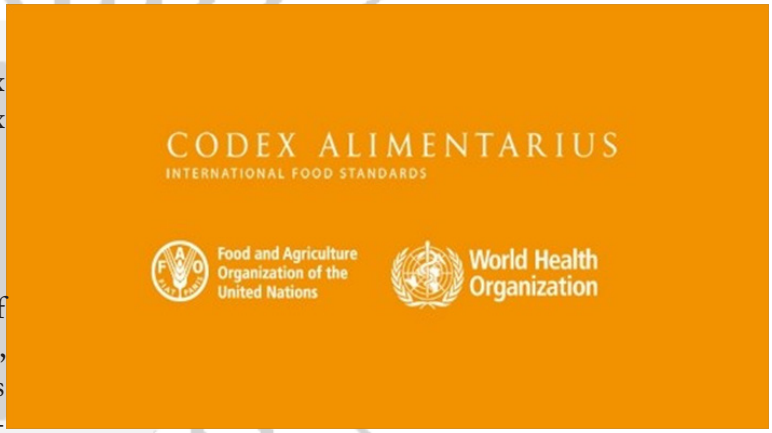
1. National Sports Board (oversight and compliance)
2. National Sports Tribunal (dispute resolution)
3. National Sports Election Panel (election integrity)

- Inclusive Representation Mandated: Executive bodies must include minimum 4 women and 2 elite athletes, enhancing gender and athlete participation.
- Age and Tenure Reforms: Officials under 70 can complete their term; 3 consecutive terms of 4 years allowed with 1-term cooling-off.
- Safe Sport Mechanism & Athlete Protection: Provides legal backing to safe sport protocols, internal grievance systems, and athlete welfare provisions.
- Ban on Court Litigation: NSFs and BCCI cannot directly approach courts and disputes must go to the National Sports Tribunal.

Codex Alimentarius

Context:

India's millet standard and leadership in Codex committees were appreciated at the 88th Codex Executive Committee (CCEXEC88) in Rome.



About Codex Alimentarius:

What it Is?

- Codex Alimentarius is a collection of internationally recognized food standards, guidelines, and codes of practice. It promotes food safety, consumer protection, and fair-trade practices in international food commerce.
- Established in: 1963 by FAO and WHO.
- Headquarters: Rome, Italy.

Objectives:

- To ensure consumer health protection and promote fair practices in food trade.
- To assist countries in harmonizing food regulations to reduce non-tariff barriers.

Key Features:

- Science-based standards: Framed with inputs from global risk assessment bodies (e.g. JECFA, JMPR).
- WTO alignment: Forms reference point for the SPS Agreement in WTO trade disputes.
- Voluntary yet influential: Though not mandatory, it influences national legislation worldwide.
- Comprehensive coverage: Includes hygiene, additives, labelling, pesticide residues, contaminants, etc.
- Transparent process: Open, inclusive committee discussions ensure fair global representation.

India's Contributions:

- Millet Standard Leadership: India chaired efforts to develop Codex standard for whole millets, co-chaired by Mali, Nigeria, Senegal.
- Codex Committee Leadership: Chairs the Codex Committee on Spices and Culinary Herbs (CCSCH) since 2014.
- Fresh Produce Standards: Led new standards on dates, co-chairing turmeric and broccoli standardisation.
- Regional Capacity Building: Provided training to Bhutan, Nepal, Sri Lanka under Codex Trust Fund mentorship.
- Strategic Planning Role: Contributed to SMART KPIs for Codex Strategic Plan 2026–2031.

Kashi Declaration

Context:

The Youth Spiritual Summit concluded in Varanasi with the adoption of the Kashi Declaration, setting a national roadmap for youth-led action against drug abuse.

About Kashi Declaration:

What It Is?

- The Kashi Declaration is a national action plan adopted at the Youth Spiritual Summit to combat substance abuse through youth and spiritual leadership.
- It emphasizes a multi-dimensional, culturally rooted framework to eliminate drug addiction from Indian society.
- Declared By: Initiated by the Ministry of Youth Affairs and Sports during the Youth Spiritual Summit 2025.

Objectives of the Declaration

- Eradicate Drug Abuse: Create a Nasha Mukt Yuva as the foundation of Viksit Bharat by 2047.
- Spiritual Mobilisation: Use India's spiritual capital as a catalyst for healing and transformation.
- Whole-of-Society Approach: Integrate families, communities, and institutions into prevention and recovery.
- Institutional Coordination: Facilitate action through a Joint National Committee and regular reporting.
- Empower Youth Volunteers: Enable youth clubs under the MY Bharat platform to lead awareness and de-addiction campaigns.

Features of the Declaration:

- Plenary-Driven Agenda: Built on four thematic sessions covering psychology, trafficking, awareness, and spiritual rehab.
- Multi-Ministerial Action Plan: Involves Ministries of Youth, Social Justice, Culture, Labour, and Home Affairs.
- Annual Review Mechanism: Includes progress tracking via Viksit Bharat Young Leaders Dialogue 2026.
- Digital Platform Monitoring: Proposes counter-measures against online targeting of school children.
- Community-Based Outreach: Launches grassroots campaigns, pledge drives, and support services via MY Bharat.

PAC has urged a comprehensive review of UIDAI's functioning

Context:

The Public Accounts Committee (PAC) has urged a comprehensive review of UIDAI's functioning after biometric verification failures led to wrongful exclusion from welfare schemes and raised concerns over data security breaches.

About PAC has urged a comprehensive review of UIDAI's functioning:

What it is PAC?

- A parliamentary committee that audits the accounts of the Union Government based on CAG reports.

  Members: Comprises 22 MPs (15 from Lok Sabha, 7 from Rajya Sabha); chaired by an opposition leader.
  Term: Reconstituted annually.

Functions:

- Examines public expenditure to ensure it is used efficiently and legally.
- Reviews autonomous bodies and public undertakings funded by the government.
- Recently reviewed UIDAI based on the CAG's 2021 report.

Key Issues Highlighted by PAC

Biometric Verification Failures:

- High failure rates exclude genuine beneficiaries from PDS, MGNREGA, etc.
- Causes: Worn fingerprints (manual labourers), iris mismatch (elderly).

Data Breaches:

- PAC flagged reports of Aadhaar data surfacing on the dark web.
- UIDAI claimed its central repository is secure and leaks mostly occur at enrolment centres.
- Duplicate and Inactive Aadhaar IDs: Aadhaar numbers exceed India's population; slow deactivation after death raises risk of misuse.
- Grievance Redressal Gaps: Citizens face difficulty correcting errors or resolving failed authentication issues.
- Use of Aadhaar by Ineligible Entities: Some MPs warned of Aadhaar being accessed by non-citizens, leading to welfare misuse.

Implications of Aadhaar Verification Failures & Data Issues

- Social Exclusion: Biometric mismatches deny genuine beneficiaries access to welfare schemes like PDS and MGNREGA.
- Security Threats: Data leaks and duplicated Aadhaar numbers expose citizens to identity theft and fraud.
- Erosion of Trust in Institutions: Frequent authentication failures and reports of data breaches reduce public faith in UIDAI.
- Welfare Leakages and Misuse: Fake or duplicated Aadhaar numbers enable ineligible persons to access subsidies.
- Governance Inefficiency: Grievance redressal failures and slow deactivation of deceased persons' Aadhaar delay service delivery.

Recommended Measures by PAC:

- Scientific Audit of Repository: A full-fledged forensic and technical review of UIDAI's central database is needed.
- Simplify Aadhaar Enrolment: Reduce procedural barriers and allow flexible documentation for genuine residents.
- Strengthen Data Security: Enforce stricter compliance protocols at Aadhaar enrolment and update centres.
- Accelerate Deactivation Post-Death: Integrate UIDAI with state civil registries to auto-deactivate Aadhaar of deceased.
- Adopt Inclusive Verification Alternatives: Enable facial recognition, OTP-based authentication, or assisted verification models.
- Ensure Beneficiary Citizenship: Review Aadhaar issuance to suspected non-citizens misusing schemes meant for Indians.

Conclusion:

The PAC has rightly flagged Aadhaar-related operational and ethical concerns, highlighting the need for technological upgrades and policy reforms. Ensuring secure, inclusive, and error-free Aadhaar authentication is vital to uphold welfare delivery, privacy, and national trust in digital governance.

PARAKH Rashtriya Sarvekshan Report

Context:

The PARAKH Rashtriya Sarvekshan Report has revealed significant learning deficits among Indian students, especially in mathematics, language, and science across Grades 3, 6, and 9.

Performance Comparision by School Management & Social categories

	Language				Mathematics			
	State govt	Govt aided	Private	Central govt	State govt	Govt aided	Private	Central govt
Grade 3	64	63	64	60	64	63	64	60
Grade 6	52	52	60	69	52	52	60	69
Grade 9	48	49	59	69	48	49	59	69

	Language				Mathematics			
	State govt	Govt aided	Private	Central govt	State govt	Govt aided	Private	Central govt
Grade 3	–	–	–	–	–	–	–	–
Grade 6	–	–	–	–	–	–	–	–
Grade 9	37	37	44	51	37	37	42	49

About PARAKH Rashtriya Sarvekshan Report:

PARAKH Report:

What it is?

- A national-level, competency-based student assessment under PARAKH – Performance Assessment, Review, and Analysis of Knowledge for Holistic Development – earlier known as the National Achievement Survey (NAS).
- Released by: Ministry of Education, Government of India; conducted in December 2024 by NCERT under the national assessment body PARAKH.

Key Summary of Findings:

Grade 3:

Language:

- 60% could read and comprehend short stories and instructions.
- 67% could use vocabulary in daily interactions.

Maths:

- Only 55% could arrange numbers up to 99 correctly.
- 58% could add and subtract two-digit numbers; only 54% understood multiplication/division concepts.
- 50% could identify geometric shapes and perform money transactions up to 100.

Grade 6:

Maths:

- Just 38% could solve daily-life arithmetic problems.
- Only 29% could work with fractions; 42% could estimate area, perimeter, and volume.

EVS & Social Understanding:

- 44% could observe and describe natural and social elements.
- 38% could identify patterns in environment (moon phases, rituals, climate change, etc.).
- 56% could explain functions of institutions like panchayats, banks, schools.

Grade 9:

Language:

- 54% could extract main ideas from editorials or reports.

Maths:

- Only 28–31% could apply percentage or fractions in real life.
- 31% understood number sets (integers, rational, real).

Science:

- Just 34% could distinguish between living and non-living traits.
- 37% could explain pressure, temperature, and density-based phenomena.
- One-third explained electric circuits, hormonal changes, and magnetic effects.

Top and Bottom Performers:

- Top States/UTs: Punjab, Kerala, Himachal Pradesh, Chandigarh, Dadra & Nagar Haveli-Daman & Diu (all three grades).
- Low-performing Districts: Meghalaya (Garo Hills), Shi Yomi (Arunachal), Reasi & Rajouri (J&K), Sahebganj (Jharkhand).

School Type Trends:

- Grade 3: Lowest math scores in Kendriya Vidyalayas.
- Grade 6: Weak math outcomes in state-run and aided schools.
- Grade 9: Kendriya Vidyalayas performed best in language.

Custodial Deaths in India

Context:

A Madurai Bench of the Madras High Court condemned the custodial torture of Ajith Kumar in Sivaganga, Tamil Nadu, calling it "more brutal than a murder."

About Custodial Death in India:

What is Custodial Death?

- Custodial death refers to the death of a person while in police, judicial, or military custody—before trial, during trial, or after conviction.
- It includes both natural causes (like illness) and unnatural ones (like torture, assault, or negligence).

Custodial Death Statistics in India:

- NHRC (2021–22): 2,150 deaths in judicial custody and 155 in police custody and only 21 saw disciplinary action (0.23%).
- NCRB (2000–2020): 1,888 deaths reported and only 26 convictions despite 893 cases filed against police.
- Between 2017–22: 345 judicial inquiries; 123 arrests, 79 chargesheets, but 0 convictions.
- Tamil Nadu (2016–2022): 490 deaths—highest in southern India.

Reasons for Custodial Deaths in India:

- Lack of Anti-Torture Law: India has signed but not ratified the UN Convention Against Torture and no standalone anti-torture legislation.
  E.g. Law Commission (273rd Report) recommended such a law in 2017.
- Opaque Investigations: Police often destroy evidence or manipulate records; conviction is rare.
  E.g. In Ajith's case, post-mortem shifted and CCTV footage missing.
- Overcrowded & Understaffed Prisons: Poor medical care, mental health neglect, and high stress lead to deaths by suicide or illness.
- Targeting Marginalized Groups: SCs make up 38.5% of preventive detenues in Tamil Nadu, despite forming only 20% of the population.
- Weak Internal Accountability: Arrests without FIR, unofficial detentions, and cover-ups are common practices in lower ranks.

Important Judicial Pronouncements:

- DK Basu vs State of West Bengal (1996): Laid down 11 guidelines for arrest and detention—mandatory medical check-ups, arrest memo, etc.
- Nilabati Behera vs State of Orissa (1993): Compensation awarded to victim's family; held State responsible under Article 21.
- PUCL vs Union of India (2005): Directed installation of CCTV in lockups for transparency.
- In Re: Custodial Violence (2020): Supreme Court asked states to file compliance reports on CCTV installation.

Way Forward:

- Anti-Torture Legislation: Enact a specific law defining custodial torture and mandating time-bound trials.
- Inspired by 273rd Law Commission Report and global practices.
- Independent Oversight: Strengthen NHRC with suo-motu powers, mandatory reporting, and follow-up on police abuse cases.
- Ratify UNCAT: Bring legal and procedural reforms to meet international human rights standards.
- Strengthen Forensic & CCTV Evidence: Use tech-enabled tracking (e.g., body cams, digital case logs) to reduce evidence tampering.
- Police Reforms: Implement the Supreme Court's Prakash Singh guidelines—fix tenure, separate investigation and law & order duties.
- Special SC/ST Safeguards: Enforce SC/ST (Prevention of Atrocities) Act provisions during detention and custodial procedures.
- Fast-track Courts: Set up special benches for custodial death trials to ensure timely justice and deterrence.

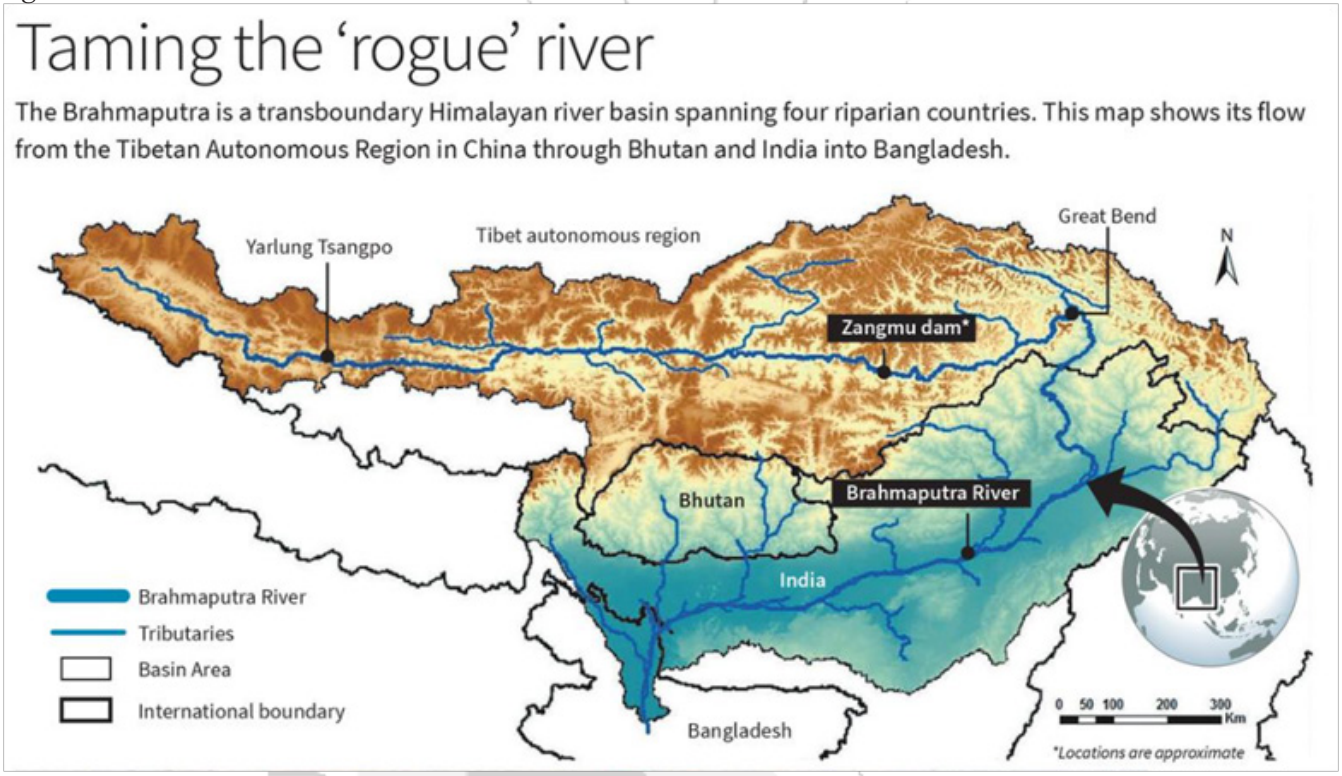
Conclusion:

Custodial deaths reflect not only institutional apathy but also a deep-rooted disregard for constitutional values. Addressing this requires structural reforms, stronger legal safeguards, and a shift towards rights-based policing.

Medog Dam: China's Brahmaputra Hydropower Project & Concerns

Context:

China approved a 60 GW mega hydropower dam at the Great Bend of the Yarlung Zangbo (Brahmaputra) in the Tibetan Autonomous Region (TAR), raising strategic, ecological, and geopolitical concerns for India, Bhutan, and Bangladesh.



About Medog Dam: China's Brahmaputra Hydropower Project & Concerns:

What is the Medog Dam Project?

- Location: Medog County, Tibetan Autonomous Region (TAR), at the Great Bend where the Yarlung Zangbo sharply turns south into Arunachal Pradesh and becomes the Brahmaputra.
- Geographical Context: The dam lies in a seismically active, high-rainfall zone within the Eastern Himalayas, near the Indo-China border, impacting both tectonic stability and downstream hydrology.
- Capacity: Planned generation of 60,000 MW, making it the world's largest hydroelectric project.

Strategic Importance:

- Positioned close to Upper Siang in Arunachal Pradesh, a region China claims as "South Tibet," giving the dam significant geopolitical and hydrological leverage over India.

Geopolitical Implications:

- Upstream Dominance: China's unilateral control over the Brahmaputra upstream alters riparian power asymmetry in its favour.
- Absence of Legal Safeguards: None of the four riparian countries are parties to the UN Watercourses Convention (1997)—no enforceable rights on water sharing.
- India–China Tensions: The dam construction adds a hydro political layer to the ongoing border disputes in Arunachal Pradesh and Ladakh.
- Dam-building Race: India has announced its Upper Siang Multipurpose Project, countering China's move, reflecting a reactive strategic posture.

Ecological and Livelihood Concerns:

- Disruption of Flow: Storing water to operate the dam will block perennial flows, affecting irrigation, ecology, and sediment transport.
- Risk to Downstream Communities: Traditional knowledge fails under unpredictable releases; agro-pastoral economies in Assam and Bangladesh are hit.
- GLOF and Seismic Risks: The dam sits in a high seismic zone (site of the 1950 Assam–Tibet earthquake) and is prone to Glacial Lake Outburst Floods (GLOFs).
- Altered Monsoon Patterns: Interventions at the source impact groundwater recharge and monsoon-linked flows, crucial for northeastern India's ecology.
- Biodiversity Threats: Disruption of aquatic habitats, wetlands, and fish migration routes may endanger species along the basin.

Strategic Alternatives for India:

- Riparian Diplomacy: India can assume a leadership role by promoting eco-regional cooperation instead of retaliatory dam-building.
- Strengthen ELM: Enhance the Expert Level Mechanism (ELM) with China for real-time data sharing, transparency, and joint assessments.
- Ecological Leadership: Promote transboundary river governance frameworks based on sustainability, not infrastructure domination.
- Disaster Preparedness: Invest in early warning systems, flood-resilient infrastructure, and community-based adaptation.
- Regional Coalition: Build a Brahmaputra River Commission involving Bhutan and Bangladesh for joint monitoring, flood planning, and basin-level conservation.

Conclusion:

The Brahmaputra is not just a river—it is a living ecological and cultural artery of the Himalayas. The Chinese Medog dam may offer megawatts, but it risks drying out the socio-ecological future of millions. A rethinking is needed—from hydro-hegemony to hydrological harmony—to safeguard the Himalayas and its people.

Klyuchevskoy volcano

Context:

The Klyuchevskoy volcano, the tallest active volcano in the Northern Hemisphere, after a massive 8.8 magnitude earthquake struck off Russia's eastern coast.

About Klyuchevskoy Volcano:

What is It?

- Klyuchevskoy (also known as Klyuchevskaya Sopka) is a stratovolcano, known for its steep conical shape and intense volcanic activity.

Location:

- Situated on the Kamchatka Peninsula, Russia, about 100 km from the Bering Sea.
- Part of the "Ring of Fire", a zone of frequent earthquakes and volcanic eruptions.

Key Features:

- Height: 4,750 meters (15,584 feet) and tallest active volcano in Eurasia.
- Eruption Record: First recorded in 1697 and has remained almost constantly active since.
- UNESCO Status: A core part of the Volcanoes of Kamchatka World Heritage Site.

About Kamchatka Peninsula:

What is It?

- A large peninsula in far eastern Russia, between the Sea of Okhotsk (west) and Bering Sea/Pacific Ocean (east).

Geographic Features:

- Spans 1,200 km north–south and 480 km east–west and total area: approx. 370,000 sq. km.
- Home to 127 volcanoes, of which 29 are active, along with geysers, hot springs, and geothermal fields.
- Dominated by two major mountain ranges: Sredinny (Central) and Vostochny (Eastern).

Ecological and Climatic Notes

- Tundra vegetation: mosses, lichens, and Kamchatka alder.
- Forested lowlands support birch, larch, poplar, and willow.
- Harsh sub-Arctic climate with cold snowy winters and cool, wet summers.

Tsunami

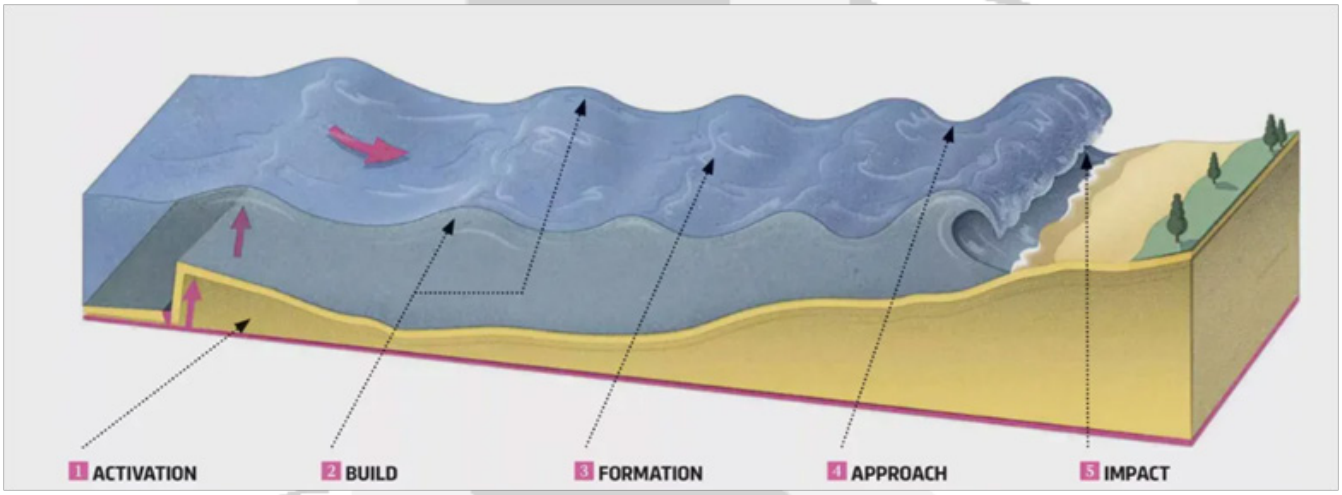
Context:

An 8.8 magnitude earthquake struck Russia's Kamchatka Peninsula triggering a tsunami that impacted Russia, Japan, and issued warnings as far as Hawaii and New Zealand.

About Tsunami:

What is a Tsunami?

- A tsunami is a series of high-energy sea waves caused by sudden large-scale disturbances like earthquakes or volcanic eruptions. These waves travel rapidly across oceans and cause major destruction upon landfall.



Tsunami Formation:

Seafloor Disturbance:

- A sudden undersea earthquake, volcanic eruption, or landslide shifts the ocean floor abruptly.
- This vertical displacement of the seabed pushes up or pulls down large volumes of seawater.
- It creates a disturbance that initiates tsunami waves spreading outward from the epicentre.

Wave Generation:

- The displaced water forms a series of long-wavelength waves that move outward in all directions.
- In deep ocean, these waves travel extremely fast—up to 800–900 km/h—like a jet plane.
- Despite high speed, the wave height in deep water is low (30–50 cm), making it barely noticeable.

Drawback Effect:

- As the tsunami approaches land, the trough may arrive before the crest, pulling water away from shore.
- This causes the sea to appear to recede dramatically, exposing seabed and marine life abnormally.
- Many people misinterpret this as low tide, unaware it precedes a devastating incoming wave

Wave Amplification:

- In shallower waters, the tsunami slows down due to friction with the seabed.
- As the trailing water masses catch up, energy is compressed and wave height rapidly increases.
- This vertical surge can grow from 1 meter to over 10 meters within minutes, intensifying its force.

Coastal Impact:

- The towering wave crashes onto the coast with immense speed and pressure.
- It inundates up to several kilometres inland, sweeping away people, buildings, trees, and vehicles.
- Subsequent retreating waves drag debris and survivors back into the sea, worsening destruction.

Characters of Tsunami:

- Long Wavelength: Tsunamis have extremely long wavelengths—up to 200 km between successive wave crests.
- High Energy and Speed (Not Height in Deep Water): In the open ocean, tsunami waves travel at jet-like speeds (up to 800–900 km/h) but appear only ~30–50 cm high.
- Multiple Waves Over Hours: Tsunamis are not a single wave but a series of waves, often arriving over several hours. The first wave is rarely the largest and later waves can be more destructive.
- Often Invisible at Sea, Deadly at Shore: In deep waters, ships barely notice a tsunami due to its low amplitude and wide spacing.

Implications of Tsunamis:

- Loss of Lives and Health Hazards: Tsunamis often lead to large-scale fatalities and injuries. For example, the 2004 Indian Ocean tsunami left thousands of dead, with many victims showing signs of drowning and blunt force trauma.
- Infrastructure Damage: Critical infrastructure such as ports, coastal homes, bridges, and even nuclear power plants can be destroyed or rendered inoperable, severely affecting the regional economy.
- Environmental Loss: Tsunamis devastate ecosystems by inundating croplands with saltwater, destroying coastal habitats, and spreading marine and human debris across vast areas of land and ocean.
- Disruption of Services: Basic services such as electricity, clean water supply, road and rail transport, and communication networks often collapse after a tsunami, delaying rescue and rehabilitation.
- Secondary Hazards: Tsunamis triggered by earthquakes can also lead to fires, chemical leaks from damaged facilities, and coastal or underwater landslides, compounding the overall destruction.

Tsunami Early Warning Systems

India's System:

- Seismic Monitoring: 24/7 seismic stations detect global quakes within 10 minutes, filtering tsunamigenic ones.
- DART Buoys (BPRs): Bottom Pressure Recorders detect sea pressure changes from deep-sea waves in real time.
- Tide Gauges: Installed along coasts, they verify tsunami waves' actual height and arrival at land.
- Alert Dissemination: INCOIS sends alerts to NDMA, media, and public via SMS, sirens, satellite, and radio.

Global Systems:

- IOC-UNESCO Coordination: Regional warning centres (e.g., PTWC, JMA) coordinate tsunami alerts globally.
- Global Seismic Networks: Real-time quake data from thousands of stations help assess tsunami risk.
- DART and Tide Gauges: Confirm tsunami formation and arrival, supporting accurate regional alerts.
- Satellite and Radar: Radar altimetry and coastal radar detect sea-level anomalies and wave patterns.

Conclusion:

Tsunamis are rare but deadly, demanding constant global vigilance and rapid response systems. India's robust early warning system and international coordination remain critical to minimizing future risks.

Kaziranga National Park

Context:

Kaziranga Tiger Reserve (KTR) in Assam has recorded the third-highest tiger density in India after Bandipur and Corbett, as per the latest report released by the Chief Minister of Assam on Global Tiger Day 2025.

About Tiger Density in India:

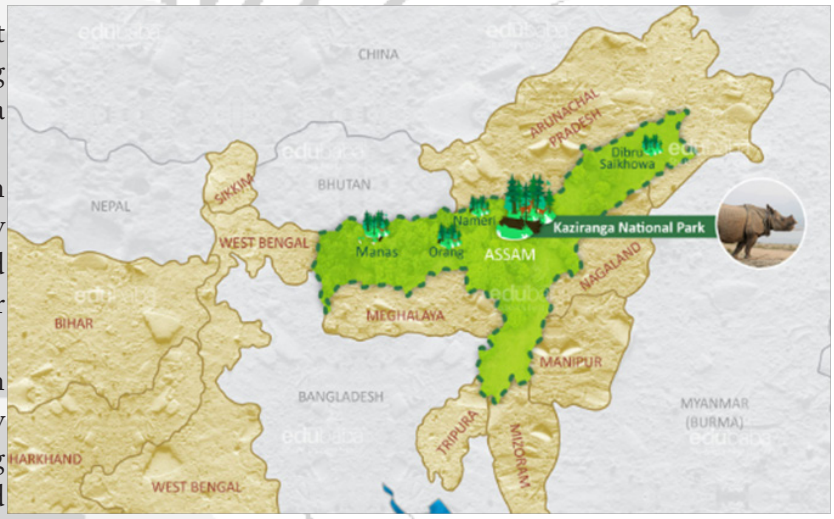
What is Tiger Density?

- Tiger density refers to the number of tigers per 100 sq. km. It is a key indicator of healthy predator populations and ecological balance.

Top 3 Tiger Reserves by Density (2024):

- Bandipur (Karnataka): 19.83 tigers/100 sq. km
- Corbett (Uttarakhand): 19.56 tigers/100 sq. km
- Kaziranga (Assam): 18.65 tigers/100 sq. km
- Kaziranga's Tiger Count: Kaziranga recorded 148 tigers over 1,307.49 sq. km, up from 104 in 2022, including 27 tigers from the newly surveyed Biswanath Division.

About Kaziranga National Park:



- Location: Located in the Golaghat and Nagaon districts of Assam, along the floodplains of the Brahmaputra River.
- Historical Significance: Established in 1905 on the recommendation of Mary Curzon, declared a UNESCO World Heritage Site in 1985, and a Tiger Reserve in 2006.
- Ecological Features: The park lies on the Eastern Himalayan biodiversity hotspot edge, with habitats including tall elephant grass, marshes, and tropical forests.

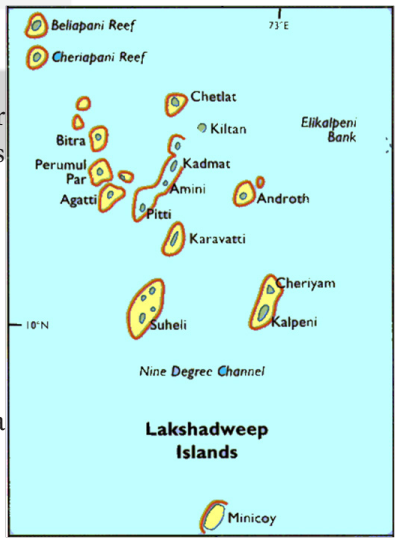
Flora:

- Four vegetation types: alluvial grasslands, savanna woodlands, moist deciduous, and semi-evergreen forests.
- Notable trees include Elephant Apple, Cotton Tree, and Indian Gooseberry.
- Fauna: Hosts the world's largest population of Indian one-horned rhinoceros (2,200+), along with tigers, elephants, swamp deer, Hoolock gibbons, and migratory birds like greater adjutant and black-necked stork.

Bitra Island

Context:

The Lakshadweep administration issued a notification to acquire Bitra Island for defence purposes, triggering strong opposition from locals and political leaders citing constitutional and livelihood concerns.



About Bitra Island:

What is Bitra Island?

- Bitra is the smallest inhabited island in the Lakshadweep archipelago.
- It spans just 0.105 sq. km in land area, with a lagoon area of 45.61 sq. km.
- It is known for its ecological significance and the shrine of Malik Mulla, a revered Arab saint.

Location and Administrative Control:

- Lies at 11°36 N and 72°11 E, about 483 km west of Kochi.
- Falls under the Union Territory of Lakshadweep, administered by the Lakshadweep Administration.

Geographical and Climatic Features

- Features a coral reef-protected lagoon, maintaining calm waters even during monsoon.
- Climate is tropical and humid, resembling Kerala's climate, with average rainfall of 1600 mm annually.
- Population as per 2011 Census: 271 residents, including 105 families.

Strategic and Defence Importance:

Geostrategic Location:

- Bitra lies along key international shipping lanes in the Arabian Sea.
- Offers proximity to the Strait of Hormuz and Malacca route, vital for maritime surveillance.

Defence Proposal:

- Proposed for acquisition to build a defence outpost, enhancing India's maritime domain awareness.
- Would join INS Dweeprakshak (Kavaratti) and INS Jatayu (Minicoy) as part of India's naval presence.
- National Security Argument: Cited for strategic positioning and logistical challenges in retaining civilian habitation on a defence-sensitive island.

Controversy and Protests:

- Local Opposition: Locals launched a "Save Bitra Island" campaign, including public protests and social media mobilisation.

Legal Framework:

- Acquisition to proceed under the Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- A Social Impact Assessment (SIA) has been ordered and survey to be completed within two months.

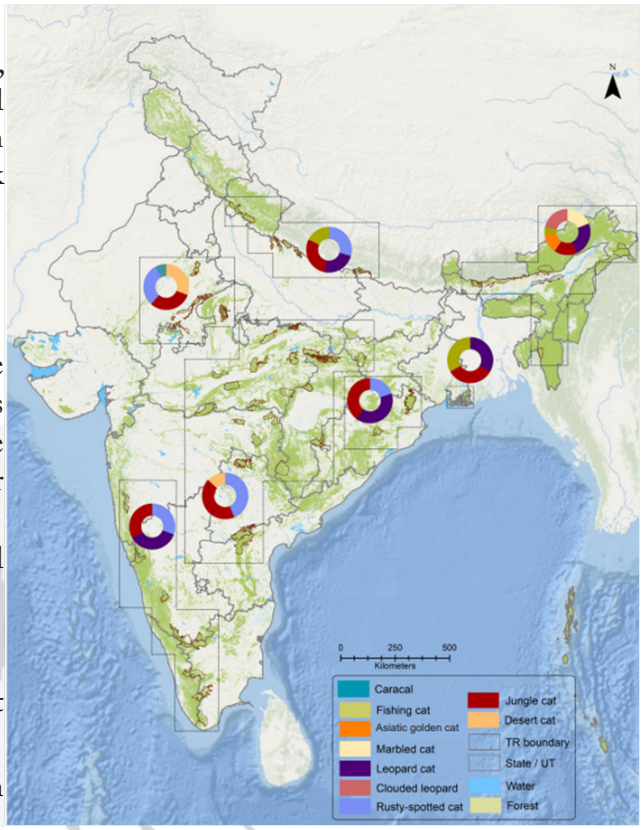
Significance:

- Raises tension between national security and indigenous rights.
- Highlights challenges in securing strategic islands without undermining local identity, culture, and consent.
- Marks the third such defence expansion in Lakshadweep, reflecting India's growing naval assertiveness in the Indian Ocean Region (IOR).

Status of Small Cats in Tiger Landscapes of India

Context:

On Global Tiger Day 2025, the Ministry of Environment, Forest and Climate Change released the report "Status of Small Cats in Tiger Landscapes of India", highlighting findings from the 2018 & 2022 All India Tiger Estimation (AITE) to track 9 small cat species across tiger habitats.



About Status of Small Cats in Tiger Landscapes of India:

What It Is?

- A first-of-its-kind scientific report assessing the occupancy, habitat distribution, and ecological status of nine small wild cat species across India's tiger-range landscapes, based on data from the All-India Tiger Estimation (2018 & 2022).
- Released By: Released on 29th July 2025 (Global Tiger Day).

Objectives of the Report:

1. To map distribution and occupancy of nine small cat species across various habitats in India's tiger landscapes.
2. To identify habitat preferences and how human disturbances impact their presence.
3. To assess conservation dependence of lesser-known felids on protected areas like tiger reserves.
4. To provide baseline data for integrating small cats into long-term wildlife monitoring and landscape planning.
5. To inform policy formulation and research for conserving small carnivores beyond charismatic megafauna.

Species Covered & Key Findings

Species	Estimated Occupancy (km^2)	Habitat Type	Key Notes
Jungle Cat	96,275	Dry to moist deciduous forests, widespread	Most common and resilient to disturbance
Rusty-Spotted Cat	70,075	Mixed deciduous forests	Second most widespread; prefers interior forests
Leopard Cat	32,800	Moist forests (NE, Western Ghats, Sunderbans)	Found mainly in Himalayan foothills, North East & wetlands
Desert Cat	12,500	Semi-arid and dry forests (W & C India)	Specialist, restricted range
Fishing Cat	7,575	Wetlands, riverine, mangroves (Terai, NE)	Habitat-specific, impacted by wetland loss
Clouded Leopard	3,250	Dense forests (NE India)	Rare, elusive, canopy-dwelling
Marbled Cat	2,325	Dense forests (NE India)	Very low detection, elusive

Asiatic Golden Cat	1,850	Evergreen forests (NE India)	Restricted and highly elusive
Caracal (no detection)	N/A	Historically in NW and Central India	Not recorded in the survey period, raises concern

Ecological Insights:

1. Habitat Generalists Thrive: Jungle and rusty-spotted cats show wide distribution across diverse forest types, even near human-modified areas.
2. Wetland & Forest Dependence: Fishing cats, leopard cats, and clouded leopards are tightly linked to specific habitats like wetlands and dense forests.
3. Altitude and Forest Density: Rare species like marbled and golden cats occupy only intact, high-canopy forests in Northeast India.
4. Human Pressure Gradient: Occupancy sharply declines with increased human activity, except for adaptive species like jungle cats.
5. Landscape-Level Continuity: Small cats rely on both core tiger habitats and buffer zones, indicating need for broader landscape planning.

Conservation Significance:

1. Baseline Mapping for 9 Species: First-ever pan-India assessment of small cats, offering essential data for targeted conservation.
2. Protected Areas as Refuges: All species showed higher presence inside protected areas, validating Project Tiger's biodiversity umbrella effect.
3. Indicator of Ecosystem Health: Presence or absence of small cats reflects habitat integrity, prey base, and ecological stability.
4. Need for Inclusive Monitoring: Emphasizes shifting focus from flagship species (like tigers) to lesser-known but ecologically vital carnivores.
5. Regional Conservation Priorities: Northeast India, Terai wetlands, and dry forests of Central India need region-specific action plans.

Policy Implications:

1. Integrate Small Felids in Planning: Landscape-level wildlife policies must include small cats in reserve, buffer, and corridor strategies.
2. Expand Monitoring Beyond Tigers: Regular small carnivore tracking should be institutionalized within All-India Tiger Monitoring exercises.
3. Prioritise Wetland and Mangrove Protection: Protect critical fishing cat habitats via enhanced eco-sensitive zone (ESZ) regulations.
4. Habitat-Specific Policy Measures: Customised conservation for habitat specialists like desert cat and marbled cat is urgently needed.
5. Public Awareness and Curriculum Inclusion: Include small cats in wildlife education, eco-club programs, and public awareness campaigns.

Conclusion:

This pioneering report brings long-overdue attention to India's small wild cats, underlining the value of tiger landscapes as biodiversity umbrellas. It sets a foundation for inclusive conservation strategies that go beyond flagship species and emphasizes the need for fine-scale ecological research and habitat preservation for lesser-known fauna.

India Wetlands Resolution was formally adopted at Ramsar CoP15

Context:

India's resolution titled "Promoting Sustainable Lifestyles for the Wise Use of Wetlands" was formally adopted at Ramsar CoP15 held in Victoria Falls, Zimbabwe on 30th July 2025.

About India Wetlands Resolution was formally adopted at Ramsar CoP15:

What it is?

- A global resolution introduced by India at Ramsar CoP15 to integrate sustainable lifestyles into wetland conservation strategies using a whole-of-society approach.

Aim of the Resolution:

- Promote pro-planet behavioural choices that support wetland protection.
- Integrate sustainable consumption and production into wetland policies and management plans.

Key Features:

- Behavioural Focus: Recognises individual and community choices as central to wetland conservation.
- Policy Integration: Encourages inclusion of lifestyle-based interventions in national and local wetland plans.
- CEPA Alignment: Supports Resolution XIV.8 on Communication, Education, Participation and Awareness (CEPA).
- Educational Drive: Emphasises education at all levels and awareness campaigns on sustainable wetlands use.
- Collaborative Approach: Seeks public–private partnerships for mobilising sustainable actions.
- Global Linkages: Builds on UNEA 6/8 (2024) and UNFCCC CoP26's Mission LiFE, amplifying India's climate leadership.

Significance:

- Elevates India's soft power in global environmental governance through innovative lifestyle diplomacy.
- Translates Mission LiFE from a national movement to a global wetland conservation paradigm.
- Supports SDGs 6, 12, 13, 15 & 17 by linking consumption behaviour, biodiversity, and water sustainability.
- Reinforces India's wetland conservation efforts under Mission Sahbhagita and Save Wetlands Campaign, engaging over 2 million citizens.

First-ever Grassland Bird Census in Kaziranga National Park

Context:

Prime Minister of India highlighted the first-ever Grassland Bird Census in Kaziranga National Park during his Mann ki Baat, praising its innovative use of acoustic technology and its role in biodiversity conservation.

About First-ever Grassland Bird Census in Kaziranga National Park:

What is it?

- A landmark bird population survey aimed specifically at grassland-dwelling birds in Kaziranga National Park (Assam), covering the period from March 18 to May 25, 2025.

Who conducted it?

Jointly undertaken by:

- Forest department officials
- Researchers including INSPIRE fellow Chiranjib Bora
- Conservationists and Kaziranga park authorities

Objectives of the Census:

- Monitor population of grassland bird species
- Identify rare, endemic, and globally threatened species
- Map breeding patterns and ecological health of the habitat

Methodology and Innovation:

- Passive Acoustic Monitoring: Recorders placed on tall trees captured birdcalls during the breeding season (March–May).

Audio Identification Tools:

- Spectrogram analysis for visualizing sound frequencies
- AI-based BirdNET software to identify bird species by song
- Coverage: Surveyed 29 locations using six recorders over three-day cycles

Key Features of the Census:

- First of its kind in India: Focused exclusively on grassland bird species, often underrepresented in conventional bird surveys.
- Data-Driven Approach: Documented 43 species, including 1 Critically Endangered, 2 Endangered, and 6 Vulnerable birds as per the IUCN Red List.
- Conservation Breakthrough: Discovery of over 85 nests of the endangered Finn's Weaver, endemic to the Brahmaputra floodplains.
- Ecological Indicator Role: Presence of grassland birds indicates healthy habitat quality, similar to BMI as a health marker.
- Highlight on Threats: Census underlined habitat loss due to ecological succession, overgrazing, cultivation, and climate change impacts.

Environment Protection (Management of Contaminated Sites) Rules, 2025

Context:

The Union Environment Ministry has notified the Environment Protection (Management of Contaminated Sites) Rules, 2025, offering India its first legal framework to scientifically identify, assess, and clean up chemically contaminated sites.

About Environment Protection (Management of Contaminated Sites) Rules, 2025:

What It Is?

- A comprehensive legal framework under the Environment (Protection) Act, 1986 to manage, assess, and remediate chemically contaminated sites across India.
- Ministry: Notified by the Ministry of Environment, Forest and Climate Change (MoEFCC).

Objective:

- To establish a time-bound, legally binding mechanism for the identification, assessment, and remediation of contaminated sites caused by hazardous chemical and waste dumping, in line with the "Polluter Pays" principle and environmental health protection.

What is Contaminated Site?

- Sites where hazardous or chemical waste was dumped historically, causing long-term pollution of soil, water, or air. These include abandoned landfills, chemical spill zones, illegal waste sites, and defunct industrial areas.

Key Provisions:

Site Identification & Monitoring:

- District authorities must submit biannual reports on suspected contaminated sites.
- State Pollution Control Boards (SPCBs) or designated bodies must provide a preliminary assessment within 90 days.

Final Confirmation & Remediation:

- Within 180 days, sites must be fully evaluated and confirmed for contamination.
- A reference organisation (expert body) prepares a remediation plan.

Responsibility & Liability:

- SPCBs must identify the polluter within 90 days.
- If untraceable or insolvent, the Centre and States jointly bear cleanup costs.
- Criminal liability enforced under Bharatiya Nyaya Sanhita (2023) if human/environmental harm is proven.

Transparency & Enforcement:

- Mandatory creation of a national inventory of contaminated sites.
- Public disclosure of cleanup status and annual audits required.

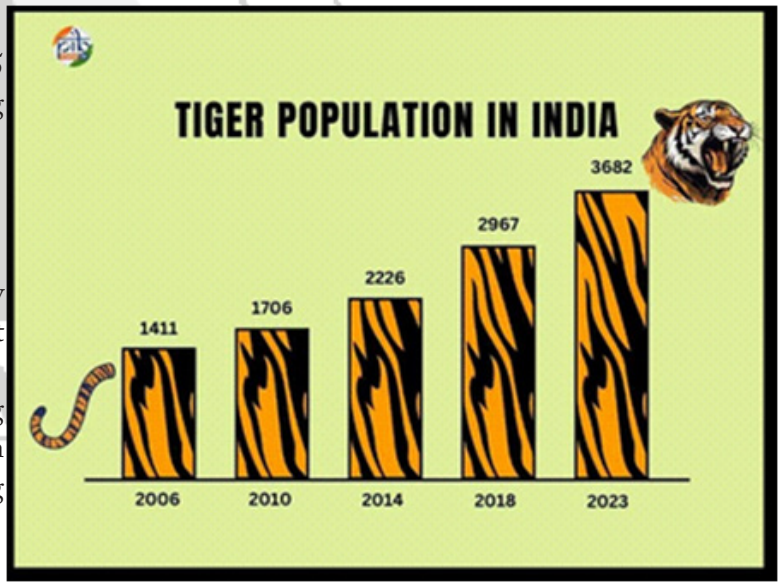
Significance for Environmental Governance:

- Fills critical policy vacuum by giving statutory teeth to CPCB's contaminated site list.
- Operationalizes "Polluter Pays" principle with strict timelines.
- Aligns India with UN SDG 6 (clean water), SDG 3 (health), and SDG 12 (responsible consumption & waste).

International Tiger Day 2025

Context:

India is celebrating International Tiger Day 2025 on July 29, highlighting its achievement of housing 75% of the world's wild tigers across 58 reserves.



About International Tiger Day 2025:

What is it?

- A global awareness day observed annually on July 29, aiming to raise awareness about tiger protection and habitat conservation.
- Established in: 2010, during the Petersburg Tiger Summit in Russia, with participation from 13 tiger-range countries, including India.

Key Features:

- Platform to highlight threats like habitat loss, poaching, and human-wildlife conflict.
- Monitors progress on the Tx2 Goal—to double wild tiger populations by 2022.
- Celebrates efforts made by countries in increasing tiger numbers and protecting forests.

India's Tiger Conservation Journey:

Project Tiger (Launched in 1973):

- Started with 9 reserves, expanded to 58 tiger reserves.
- Governed by the National Tiger Conservation Authority (NTCA).
- Reserves now cover 2% of India's land area.

Major Achievements:

- Doubled tiger population: From ~1,400 in 2006 to 3,682 in 2024.
- Achieved the global Tx2 target ahead of schedule.
- Tigers occupy 138,200 sq. km of forest shared with ~60 million people.

Ecological Significance:

- Tigers regulate herbivore populations, preserving forest balance.
- Healthy tiger habitats support biodiversity, improve climate resilience, and act as carbon sinks.
- Forests act as water catchments, helping nearby agriculture and communities.

India's Role in Global Conservation:

- Contributes 75% of world's tiger population, while holding only 18% of global tiger habitat.
- India's model, combining scientific management, legal protection, and community participation, is emulated by other tiger-range nations.

Draft National Telecom Policy (NTP) 2025

Context:

The Ministry of Communications released the Draft National Telecom Policy (NTP) 2025, proposing incentives for using Indian-made telecom equipment.

About Draft National Telecom Policy (NTP) 2025:

What is Draft NTP 2025?

A forward-looking national policy framework by the Department of Telecommunications (DoT) that outlines India's telecom priorities from 2025 to 2030, focusing on Atmanirbhar Bharat, universal access, and future technologies like 6G and quantum communication.

Key Features of Draft NTP 2025:

1. Domestic Equipment Push

- Proposes incentives for operators using locally made telecom gear to support Indian firms like Tejas Networks and HFCL.
- Aims to substitute 50% of telecom imports through homegrown manufacturing.

2. R&D and IP Innovation:

- Plans to double India's telecom R&D expenditure, support 500 tech startups, and capture 10% of global 6G-related IPRs.
- Emphasizes blended finance, fund-of-fund models to promote innovation.

3. Infrastructure & Universal Connectivity:

- Targets 100% 4G coverage and 90% 5G coverage by 2030.
- Increase tower fiberization from 46% to 80% and fully connect all gram panchayats via BharatNet with 98% uptime.
- Expand fixed-line broadband to 100 million households and deploy 1 million public Wi-Fi hotspots.

4. Employment and Skill Development:

- Plans to create 1 million new jobs and upskill 1 million workers in emerging telecom areas.

5. Export and Investment Targets:

- Double exports of telecom products and services.
- Achieve 1 trillion annual investments in the telecom sector.

6. Secure and Trusted Networks:

- Proposes equipment audits to weed out non-trusted telecom hardware, with a focus on national security via quantum-secure systems.

7. Green Telecom Goals:

- Set to cut the sector's carbon footprint by 30%, emphasizing sustainable deployment and clean energy integration.

Significance of the Policy:

1. Atmanirbhar Telecom Boost: Revives focus on Make-in-India in telecom equipment, reducing reliance on Chinese imports.
2. Bridging Digital Divide: Addresses rural-urban digital gap via aggressive fiberization and public Wi-Fi expansion.
3. Revamping PLI Shortcomings: Acknowledges past lapses in PLI disbursements and attempts corrective action through demand generation and clearer policy alignment.
4. Global Tech Race Readiness: Positions India for 6G leadership, leveraging startups and IP development.
5. Holistic Sectoral Reform: Envisions synergy across connectivity, innovation, investment, and national security.

Conclusion:

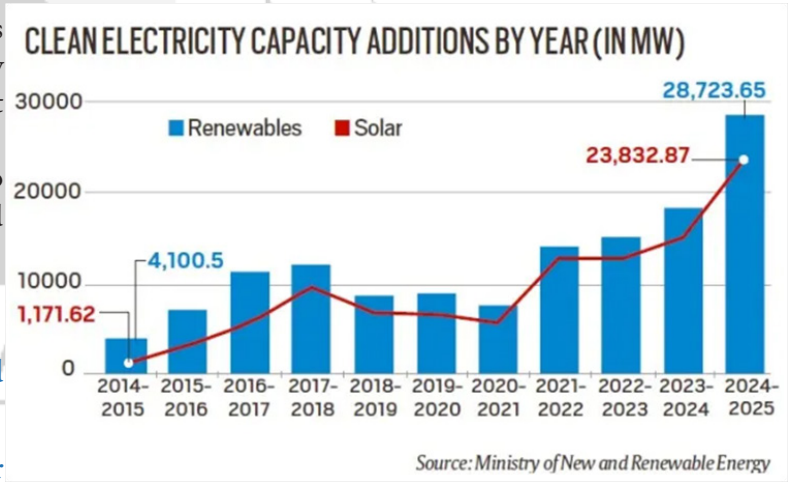
The Draft NTP 2025 marks a strategic shift toward self-reliance, innovation, and secure telecom infrastructure. By addressing past policy gaps and setting bold targets, it aims to transform India into a global telecom hub. Its success, however, hinges on timely execution and ecosystem alignment.

Tracking India's Climate Goals

Context:

India has announced that non-fossil fuel sources now constitute over 50% of its installed electricity capacity, fulfilling a core 2030 Paris Agreement target five years ahead of schedule.

- Meanwhile, significant progress is also seen in emission intensity reduction and carbon sink expansion.



About Tracking India's Climate Goals:

India's Paris Climate Commitments (Updated NDCs):

India's three key climate targets for 2030 under the Paris Agreement:

1. Installed electricity capacity: At least 50% from non-fossil fuel sources.
2. Emission intensity: Reduce by 45% from 2005 levels.
3. Carbon sink: Create an additional 2.5 to 3 billion tonnes CO_2 equivalent through forest/tree cover.

Achievements So Far:

1. Installed Non-Fossil Fuel Capacity

- India has reached 484.82 GW, of which 242.78 GW is from non-fossil sources (hydro, nuclear, solar, wind).

- Achieved the 50% target by 2025, five years early.
- In 2024 alone, India added 30 GW renewable, including 24 GW of solar.

2. Carbon Sink Target:

- India added 2.29 billion tonnes of carbon sink by 2021.
- ISFR data shows an annual increase of ~150 million tonnes.
- If trends continue, total sink crosses 2.5 billion tonnes by 2023, meeting the target.

3. Emissions Intensity:

- As of 2020, India had reduced emissions intensity by 36%.
- Even without updated data, progress indicates that 45% reduction by 2030 is achievable.

Reality Check:

Indicator	Data
Electricity in total energy use	<22%
Share of non-fossil in electricity generation (not capacity)	28%
Overall clean energy in total energy consumption	≈6% (electricity share × clean share of electricity)

- Most energy consumption in India is still through direct fossil fuel use (coal, oil, gas).
- So, while electricity is greening fast, industry, transport, and cooking still rely heavily on polluting fuels.

Significance of India's Progress:

- Early achievement of targets enhances India's credibility at COP and UNFCCC platforms.
- Demonstrates that a developing country can lead in clean energy transitions.
- India is proving that climate goals can be aligned with development imperatives, despite lacking climate finance from developed countries.

Challenges Ahead:

- China's Pace: China is expanding renewable capacity at nearly ten times India's rate, widening the global green energy leadership gap.
- Electricity Intermittency: Solar and wind generation depend on weather and time, unlike coal/nuclear which provide consistent base-load.
- Slow Uptake in Non-Power Sectors: Sectors like transport, industry, and buildings still heavily rely on direct fossil fuel use.
- SMRs Unlikely by 2030: India's Small Modular Reactor program is still in R&D stage and not deployment-ready.

Way Forward:

- Scale Clean Technologies Beyond Power: Decarbonizing transport, industry, and cooking with EVs, green hydrogen, and clean biomass is critical.
- Accelerate Nuclear and Hydro: Stable power from nuclear and hydro ensures round-the-clock electricity alongside intermittent solar and wind.
- Push for Global Climate Finance: India needs concessional finance and tech transfers promised under the Paris Agreement.
- Domestic Carbon Market: A regulated carbon credit system can incentivize industries to cut emissions voluntarily.

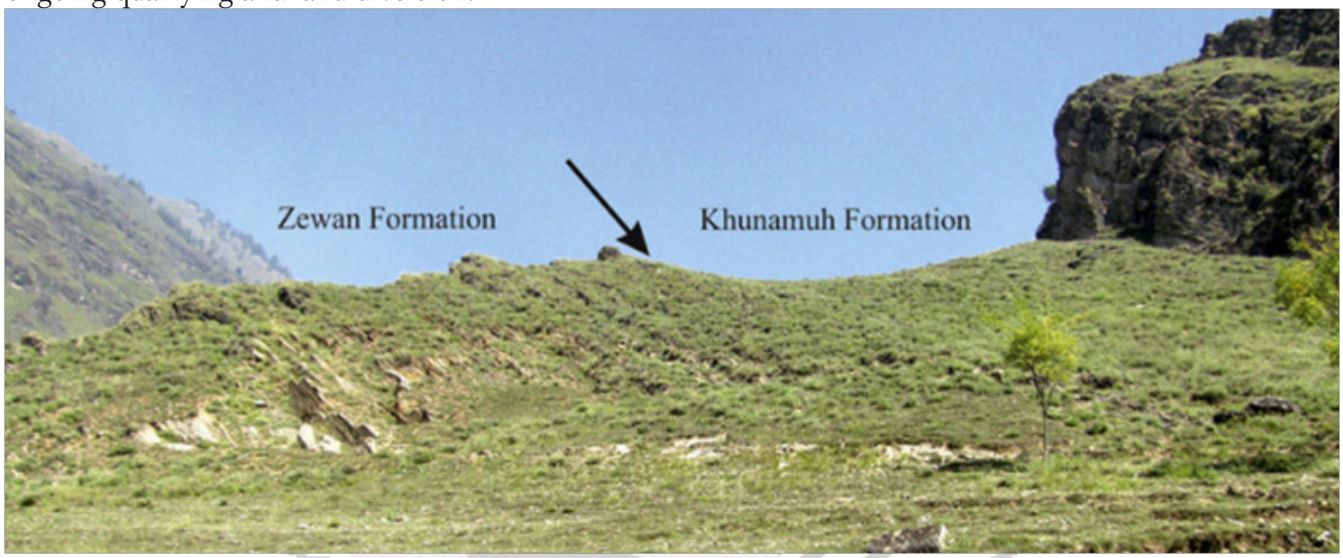
Conclusion:

India's achievement of its climate goals — especially five years in advance — signals a transformative moment in global climate leadership. But the real challenge lies beyond power generation: in shifting the entire energy economy, ensuring just transitions, and holding developed countries accountable for support. The next phase will require fiscal innovation, deep sectoral reforms, and resilient governance to sustain the pace.

Guryul Ravine Fossil Site

Context:

The Geological Survey of India (GSI) has warned of severe threats to the Guryul Ravine fossil site in Kashmir due to ongoing quarrying and land diversion.



About Guryul Ravine Fossil Site:

What It Is?

- Guryul Ravine is a 260-million-year-old geological fossil site, capturing Earth's greatest mass extinction—the Permian–Triassic boundary (PTB). It offers unmatched insight into ancient climate change and evolutionary events.

Located In:

- Situated in Khonmoh, on the outskirts of Srinagar, Jammu & Kashmir.
- Geologically part of the Vihi District.

How It Formed?

- Formed during the Permian–Triassic transition, when volcanic activity, oxygen decline, and climate disruption triggered global die-offs.
- Over time, marine and terrestrial sediments preserved fossil-rich strata.

Features of Guryul Ravine:

- Permian–Triassic Marker: Hosts rare fossil evidence of the 'Great Dying' event that wiped out 90% of marine and 70% of terrestrial species.
- World's Oldest Tsunami Record: Exposed layers contain geological proof of Earth's first known tsunami.
- Global Research Hub: Visited by geologists from over 10 countries, including USA, Japan, and China, for academic studies.
- Declared Fossil Zone: Notified under Government Order of 2017 for protection of 9.8 lakh sqm.
- Much Larger Than China's Meishan: Its 3m-thick boundary section dwarfs China's 27cm fossil record, making it superior in scale and significance.

Significance of the Site:

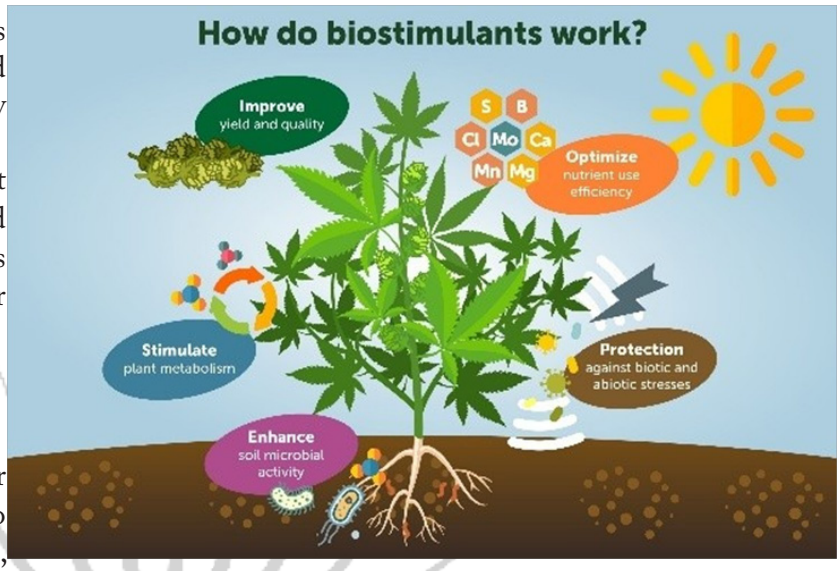
- Scientific Value: Crucial for understanding past climate shifts and their relevance to today's environmental crisis.
- Heritage Importance: Eligible for UNESCO Global Geopark and National Geological Monument status.
- Tourism Potential: Offers rare geotourism value and can become a major attraction like Meishan in China.

Biostimulants

Context:

Union Agriculture Minister has directed states to halt forced sales of biostimulants, amid rising complaints over efficacy and regulatory violations.

- The Centre is tightening oversight on biostimulants through revised specifications and regulatory checks under the Fertiliser Control Order (FCO), 1985.



About Biostimulants:

Definition:

- Biostimulants are substances or microorganisms that, when applied to plants or soil, enhance nutrient uptake, plant growth, yield, and stress resistance, without being classified as fertilisers or pesticides.

Key Characteristics:

- Non-nutrient input: Unlike fertilisers, they stimulate plant physiological processes.
- Derived from nature: Often made from plant residues, seaweed extracts, or microbes.
- Not a pesticide substitute: They don't directly control pests, and are regulated separately under FCO.
- Crop-specific efficacy: Applied for specific crops like paddy, onion, brinjal, chilli, etc.

Regulatory Framework:

Legal Backing:

- Included under Fertiliser Control Order (FCO), 1985 through an amendment in February 2021.
- Must comply with toxicity tests, eco-safety trials, and bio-efficacy studies.

Mandatory Testing:

- Five acute toxicity tests (oral, dermal, inhalation, eye, skin).
- Four eco-toxicity tests (on fish, birds, honeybees, and earthworms).
- Trials at 3 agro-ecological zones over a season, with 3 different doses.

Central Biostimulant Committee:

- Constituted in 2021 for 5 years under the Agriculture Ministry.
- Advises on product approvals, testing methods, and lab standards.

Government Action & Current Issues

- Misuse reported: Retailers forcing farmers to buy biostimulants with subsidised fertilisers.
- Crackdown on unregistered products: From 30,000+ unregulated products, only 650 now permitted.
- March 2024 deadline lapse: Provisional licences expired and unsold stocks now ineligible for sale.
- Crop-specific specs: Notified in May 2025 for tomato, chilli, paddy, cotton, soybean, and more.

India's Growing Biostimulant Market:

- Valued at USD 410 million in 2025, projected to reach USD 1.13 billion by 2032.
- Driven by demand for low-input sustainable agriculture and climate-resilient practices.

India has achieved 50% installed electricity capacity from non-fossil fuel sources

Context:

India has achieved 50% installed electricity capacity from non-fossil fuel sources, five years ahead of its 2030 Nationally Determined Contributions (NDC) target under the Paris Agreement.

About India has achieved 50% installed electricity capacity from non-fossil fuel sources:

What is the 50% Non-Fossil Fuel Capacity Milestone?

- It refers to half of India's total installed power generation capacity (484.82 GW) now coming from non-fossil sources—renewables, large hydro, and nuclear.

As of June 30, 2025:

- Thermal (fossil-based):04 GW (49.92%)
- Non-fossil fuel total:78 GW (50.08%)
- Renewable Energy (RE): 184.62 GW
- Large Hydro: 49.38 GW
- Nuclear: 8.78 GW

Factors Behind Success:

- Political Commitment: The central leadership, especially PM Modi and MNRE, provided consistent policy direction and funding for renewable energy expansion.
- Private Sector Involvement: Major domestic and foreign investments in solar, wind, and hybrid projects enabled rapid capacity growth with innovation.
- State-Level Initiatives: States like Gujarat and Tamil Nadu pioneered renewable parks and wind corridors, supporting decentralised implementation.
- Digital Grid Infrastructure: Smart meters, EV infrastructure, and digital load balancing enabled better integration of variable renewable sources.
- International Cooperation: Partnerships like ISA and JETP facilitated technology transfer, concessional financing, and global visibility.

Challenges & Issues:

- Grid Stability Risks: Renewable power variability stresses the grid; maintaining frequency balance requires storage and demand response mechanisms.
- Land Use Conflicts: Solar and wind projects sometimes displace farmlands, forests, or community lands, raising environmental and social concerns.
- Storage Infrastructure Gaps: Limited availability of large-scale battery or hydro storage constrains round-the-clock renewable supply.
- Intermittency: Solar and wind depend on weather and time, creating unpredictable generation patterns and reliability issues.

- Cybersecurity: As the power sector digitalises, it becomes vulnerable to hacking, malware attacks, and algorithmic disruptions.

Way Ahead:

- Grid Modernisation: Upgrade grids with AI-driven demand forecasting and two-way communication to manage distributed energy efficiently.
- Storage Scaling: Invest in Battery Energy Storage Systems (BESS) and pumped hydro to buffer intermittent renewables and ensure grid reliability.
- Circular Economy: Build recycling systems for solar panels, batteries, and wind turbines to reduce waste and resource dependency.
- Energy Equity: Promote rooftop solar and microgrids in rural, tribal, and underserved regions to ensure just energy access.
- Green Hydrogen: Scale up green hydrogen as a clean industrial fuel to decarbonise transport, refineries, and heavy industries.
- Cyber Resilience: Strengthen digital firewalls, real-time monitoring, and national cybersecurity protocols for energy infrastructure.

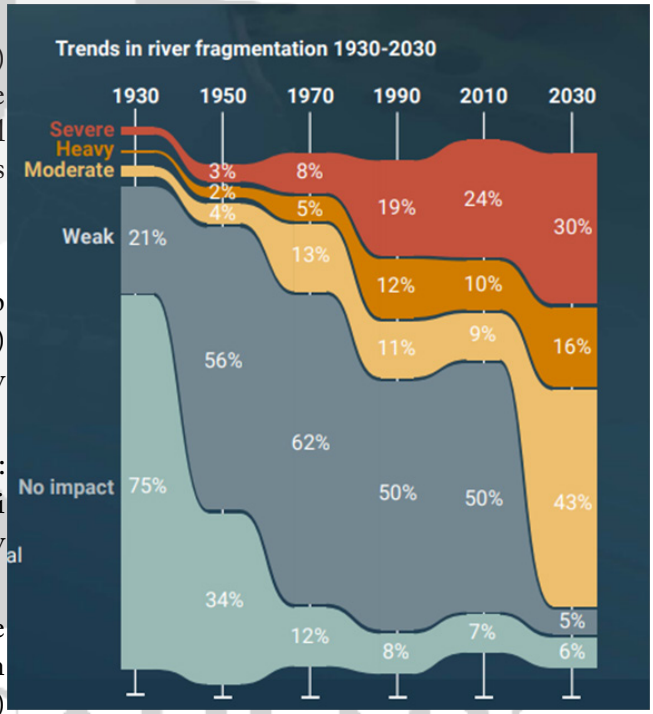
Conclusion:

India's early achievement of 50% non-fossil fuel capacity is a proof of concept that climate action and economic growth can go together. It strengthens India's global credibility as a clean energy leader. Now, the focus must shift to resilient, equitable, and intelligent energy systems for long-term sustainability.

UNEP Frontiers Report 2025

Context:

The United Nations Environment Programme (UNEP) released its 2025 edition of the Frontiers Report titled "The Weight of Time", warning that intensified river and coastal flooding could remobilise long-buried legacy toxic chemicals from sediments, threatening ecosystems and human health.



About UNEP Frontiers Report 2025:

1. Legacy Pollutants in Sediments: Floodwaters can stir up toxic legacy chemicals like heavy metals (cadmium, lead) and persistent organic pollutants (POPs), previously buried in river and coastal sediments.
2. Carcinogenic and Endocrine Disrupting Risks: Cadmium levels in rivers like Ganga, Hindon, and Vaigai exceed safe limits, increasing risks of cancer, kidney damage, and pregnancy complications.
3. Global Case Studies of Toxic Mobilization: Hurricane Harvey (2017) spread mercury and carcinogens in Texas' Galveston Bay; the Niger Delta floods (2012) remobilized polycyclic aromatic hydrocarbons (PAHs).
4. Pakistan's Storage Disaster: The 2010 floods swept away a large share of 2,835 MT of obsolete pesticides, risking long-term contamination.
5. Current Chemical Sources Still Active: Landfills globally store 4.8–7 million tonnes of POP waste, from organochlorine and organofluorine production.
6. Climate Change Intensifies the Threat: Increasing rainfall and tropical cyclones intensify flood frequency and scale, aggravating the release of toxic sediments.
7. Bioaccumulation in Food Chain: Sediment-bound pollutants can enter the aquatic food chain, affecting fish, plants, and ultimately humans.
8. Long-Term Persistence: Despite bans on many toxic chemicals, they persist for decades, making their delayed re-emergence especially dangerous.

9. Need for Adaptive Flood Management: The report stresses a river-basin-level adaptive approach, integrating hydrology, ecology, and community knowledge.

Key Challenges Highlighted:

- Sediment Remobilization: Toxic substances once safely buried are now being re-exposed due to flooding.
- Lack of Monitoring: Most river basins lack real-time monitoring of sediment pollution or chemical storage.
- Infrastructure Gaps: Poorly maintained waste storage sites and aging infrastructure worsen contamination risks.
- Unmanaged Urbanization: Encroachment and land-use changes around rivers increase flood vulnerabilities.
- Chemical Persistence: Legacy pollutants like POPs and heavy metals are highly resistant to degradation.

Recommendations and UNEP's Call to Action:

- Nature-Based Solutions: Prioritize floodplains, wetlands, and riparian buffers to absorb and slow down floods naturally.
- Strengthen Infrastructure: Use traditional methods like polders, dikes, and retention basins to control sediment movement.
- Integrated River Basin Management: Develop comprehensive basin-level plans that address floods, conservation, and water use together.
- Sediment Pollution Mapping: Invest in detailed geo-mapping and profiling of riverbed chemicals to plan interventions in advance.
- Monitor Pollutant Pathways: Track how pollutants travel post-flood — via water, soil, or food chain — and apply mitigation techniques.
- Update Waste Disposal Practices: Safely dispose of obsolete pesticides and toxic industrial by-products before disasters occur.

Conclusion:

The UNEP Frontiers 2025 report is a stark reminder that climate change and pollution risks are no longer isolated. Flooding not only displaces people but also awakens buried toxic legacies, threatening ecosystems and health. India and the world must adopt holistic, science-based, and inclusive river basin management frameworks to mitigate cascading risks.

HTBt Cotton

Context:

An expert panel under India's biotech regulator has submitted a favourable biosafety report on HTBt cotton, bringing it one step closer to commercial approval by the Genetic Engineering Appraisal Committee (GEAC).

About HTBt cotton:

What is HTBt Cotton?

- HTBt (Herbicide-Tolerant Bacillus thuringiensis) cotton is a genetically modified cotton variety that combines two traits:
- Insect resistance (via Bt gene), and
- Tolerance to herbicides like glyphosate, enabling simplified weed control in cotton farming.
- Developed By: Developed by Mahyco-Monsanto Biotech (Bayer), featuring the Bollgard II Roundup Ready Flex (BG-II RRF) trait.

How It Is Developed?

- Genetic engineering introduces Cry genes (from Bt bacterium) for pest resistance.
- Additional integration of CP4-EPSPS gene enables herbicide tolerance, allowing crops to survive glyphosate spraying while weeds perish.

Key Features of HTBt Cotton:

- Dual-Trait Technology: Combines bollworm resistance and herbicide tolerance in a single crop.
- Weed Management Efficiency: Enables over-the-top glyphosate spraying, minimizing the need for manual weeding and labour.
- Higher Yield Stability: Reduces crop losses due to weeds and insects, improving productivity.
- Supports Mechanisation: Suitable for large-scale mechanised farming in regions facing labour shortages.
- Farmer Cost Savings: Reduces input costs on weeding; improves net profitability.

Significance:

- Addresses labour shortages and rising costs of manual weeding in cotton farming.
- Helps combat yield stagnation caused by factors like Tobacco Streak Virus (TSV) in Bt cotton areas.
- Reduces illegal seed use and enforces quality control through regulated commercial cultivation.

India successfully launched the NASA–ISRO Synthetic Aperture Radar (NISAR) satellite

Context:

India successfully launched the NASA–ISRO Synthetic Aperture Radar (NISAR) satellite aboard GSLV-F16 from Sriharikota on July 31, 2025.

- It marks the first joint Earth-observation mission between ISRO and NASA, symbolizing deep Indo-US space collaboration.

About India Successfully Launched The NASA–ISRO Synthetic Aperture Radar (NISAR) Satellite:

What is NISAR?

- Full Form – NASA–ISRO Synthetic Aperture Radar: Joint Earth observation satellite using dual-frequency SAR tech for land and ice monitoring.
- Mission Life – 5 years (2025–2030): Designed to capture Earth data over five years with 12-day revisit cycles.
- Orbit – Sun-synchronous polar orbit (747 km): Ensures consistent lighting for accurate change detection across the globe.
- Launch Site – Satish Dhawan Space Centre, Sriharikota: Launched aboard GSLV-F16, marking ISRO's first polar orbit GSLV mission.

Objectives Of the Nisar Mission:

- Detect minute land and ice surface movements with centimetre-level precision.
- Monitor natural disasters such as earthquakes, floods, landslides, and volcanic activity.
- Track changes in forests, glaciers, wetlands, and soil moisture.
- Support agriculture, infrastructure, coastal, and climate management through actionable data.

Key Features of the Nisar Mission:

- Dual-Frequency SAR: First satellite to use both L-band (NASA) and S-band (ISRO) radars.
- Wide Swath & High Resolution: Scans 242 km swath with detailed spatial mapping every 12 days.
- All-Weather, 24/7 Imaging: Operates day-night, even through cloud cover and storm conditions.
- 12-metre Deployable Reflector Antenna: Enables advanced SweepSAR technology for surface deformation detection.

Contributions: INDIA vs. USA

- NASA: L-band radar, deployable boom, reflector antenna, GPS, solid-state recorder, and telecom system.
- ISRO: S-band radar, satellite bus (I-3K), GSLV-F16 launcher, solar arrays, data handling, and ground control.
- Mission Management: Jointly executed via NASA's JPL and ISRO's multiple centers (SAC, URSC, VSSC, NRSC).

Significance Of Nisar Mission:

- Scientific Edge: Enables global-scale, real-time Earth system monitoring and disaster forecasting.
- Strategic Diplomacy: Strengthens Indo-US civil space cooperation under "science diplomacy."

- Climate Action & SDGs: Assists in global efforts towards climate adaptation, sustainable agriculture, and resource governance.
- Knowledge Export: Open data policy supports developing nations and global researchers in Earth sciences.

Conclusion:

NISAR is a landmark in Indo-US space partnership, blending high-end technology with societal impact. It transitions India from utility-driven to knowledge-led space applications. Through NISAR, India affirms its leadership in Earth observation, sustainability, and global science cooperation.

Foot and Mouth Disease (FMD)

Context:

Foot and Mouth Disease (FMD) has been confirmed as the cause behind the death of 16 spotted deer at Rajiv Gandhi Zoological Park, Pune, prompting urgent reviews of epidemic control.

About Foot and Mouth Disease (FMD):

What is FMD?

- Foot and Mouth Disease is a highly contagious viral disease that affects cloven-hoofed animals such as cattle, buffaloes, goats, sheep, pigs, and deer. It causes fever, painful blisters, and lameness, severely impacting animal productivity and economic output.

Historical Overview:

- First identified: In the United States in 1870 and eradicated by 1929.
- Current Status: Endemic in many parts of Asia, Africa, and the Middle East.
- Zoonotic Potential: FMD does not affect humans and is not a food safety threat.

Transmission and Symptoms:

- Transmission: Direct contact, contaminated feed, tools, vehicles, and airborne particles.
- Vector Hosts: Cattle, pigs, goats, sheep, deer (like the Pune zoo chitals).
- Incubation: 2–14 days.

Symptoms:

- High fever for 2–3 days.
- Blisters on mouth, tongue, hooves, mammary glands.
- Excessive salivation and lameness.
- Low milk yield, abortions, and sterility.
- Diagnosis: Laboratory testing at accredited institutes (e.g., ICAR-NIFMD, Bhubaneswar).
- Control Measures and Government Interventions:

National Animal Disease Control Programme (NADCP):

- Launched in 2019, 100% centrally funded.
- Targets FMD and Brucellosis eradication by 2030.
- Integrated with Livestock Health and Disease Control Programme (LHDCP): Supports vaccination, ear-tagging, disease surveillance, cold chain, and awareness.
- Institutional Infrastructure: ICAR-NIFMD, IVRI Bareilly, NIVEDI Bengaluru conduct vaccine R&D, monitoring, and outbreak reporting.

Hydrogen-powered Driving Power Car

Context:

India successfully tested its first hydrogen-powered Driving Power Car at the Integral Coach Factory (ICF), Chennai.

- This move is part of the government's larger vision to introduce 35 hydrogen trains under the 'Hydrogen for Heritage' scheme.

About Hydrogen-powered Driving Power Car:

What is a Hydrogen Train?

- A hydrogen train is powered by hydrogen fuel cells, which generate electricity through a chemical reaction between hydrogen and oxygen, emitting only water and heat.
- Developed By: Integral Coach Factory (ICF), Chennai, under Indian Railways, with technical oversight from Northern Railways.
- Objective: To replace diesel locomotives with eco-friendly hydrogen alternatives, especially on heritage and non-electrified routes, and reduce railways' carbon footprint by 2030.

How It Works?

- Hydrogen fuel cells convert hydrogen into electricity to power traction motors. Batteries store excess energy, and regenerative braking enhances efficiency.

Key Features:

- Power Capacity: 1200 HP — world's most powerful hydrogen train engine.
- Coach Configuration: 10-car rake vs. global average of 5.
- Emissions: Zero-emission and produces only water vapour.
- Cost Efficiency: 80 crore/train and 70 crore/route for infrastructure.
- Pilot Route: Jind–Sonipat (Haryana) selected for initial operations.

Significance:

- Global Leadership: Puts India among global pioneers in hydrogen rail technology.
- Net-Zero Vision: Supports Indian Railways' 2030 decarbonisation target.
- Green Economy Push: Can extend to trucks, tugboats, and heavy industry.

Human Rated Launch Vehicle (HLVM3)

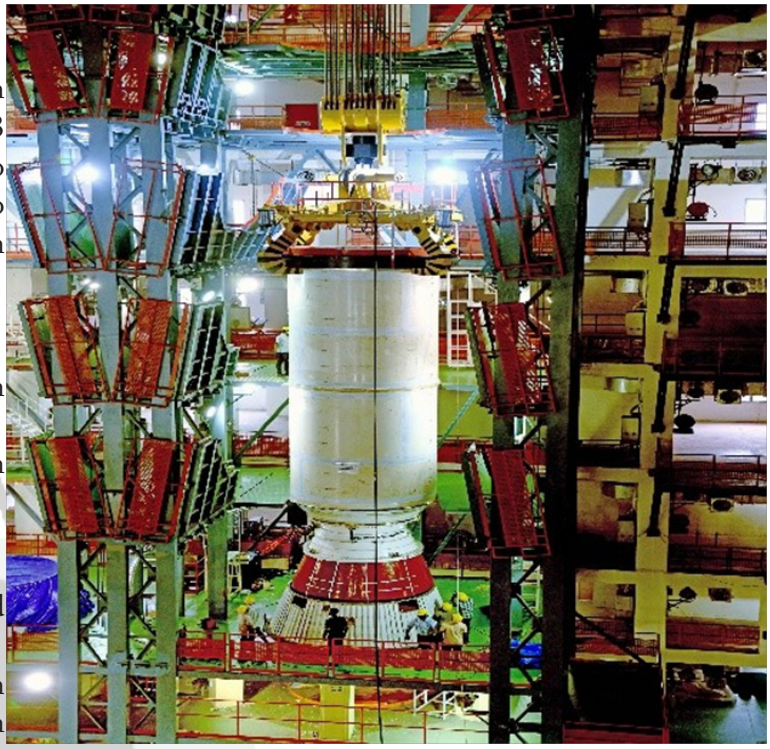
Context:

Union Minister confirmed in Parliament that India has completed the development and ground testing of the Human Rated Launch Vehicle (HLVM3) for the Gaganyaan mission, marking a key milestone ahead of India's first human spaceflight.

- The long-term vision includes the Bharatiya Antariksha Station by 2035 and Indian Moon Landing by 2040.

About Human Rated Launch Vehicle (HLVM3):

What is HLVM3?



- HLVM3 is India's first human-rated launch vehicle, adapted from the proven LVM3 (GSLV Mk III) platform, designed to safely carry astronauts (Gaganyatris) into Low Earth Orbit under the Gaganyaan programme.

Developed By:

- Indian Space Research Organisation (ISRO)
- Designed under the guidance of the Human Space Flight Centre (HSFC)

Mission Aim:

- Enable safe launch, orbital insertion, and return of Indian astronauts.
- Form the backbone for future long-term missions like Bharatiya Antariksha Station and Indian lunar landing.
- Build self-reliant capacity in human space exploration and demonstrate advanced space safety systems.

Key Features of HLVM3:

Three-Stage Configuration:

- Two S200 solid rocket boosters, L110 liquid core stage, and C25 cryogenic stage.
- Capable of lifting ~10 tonnes to Low Earth Orbit.

Human-Rated Modifications:

- Systems upgraded for redundancy, fault-tolerance, and escape options.
- Designed with higher safety margins and enhanced quality assurance protocols.

Crew Escape System (CES):

- Five types of motors already tested.
- Enables safe ejection of crew during ascent in emergencies.
- Operational from liftoff to orbital injection phase.

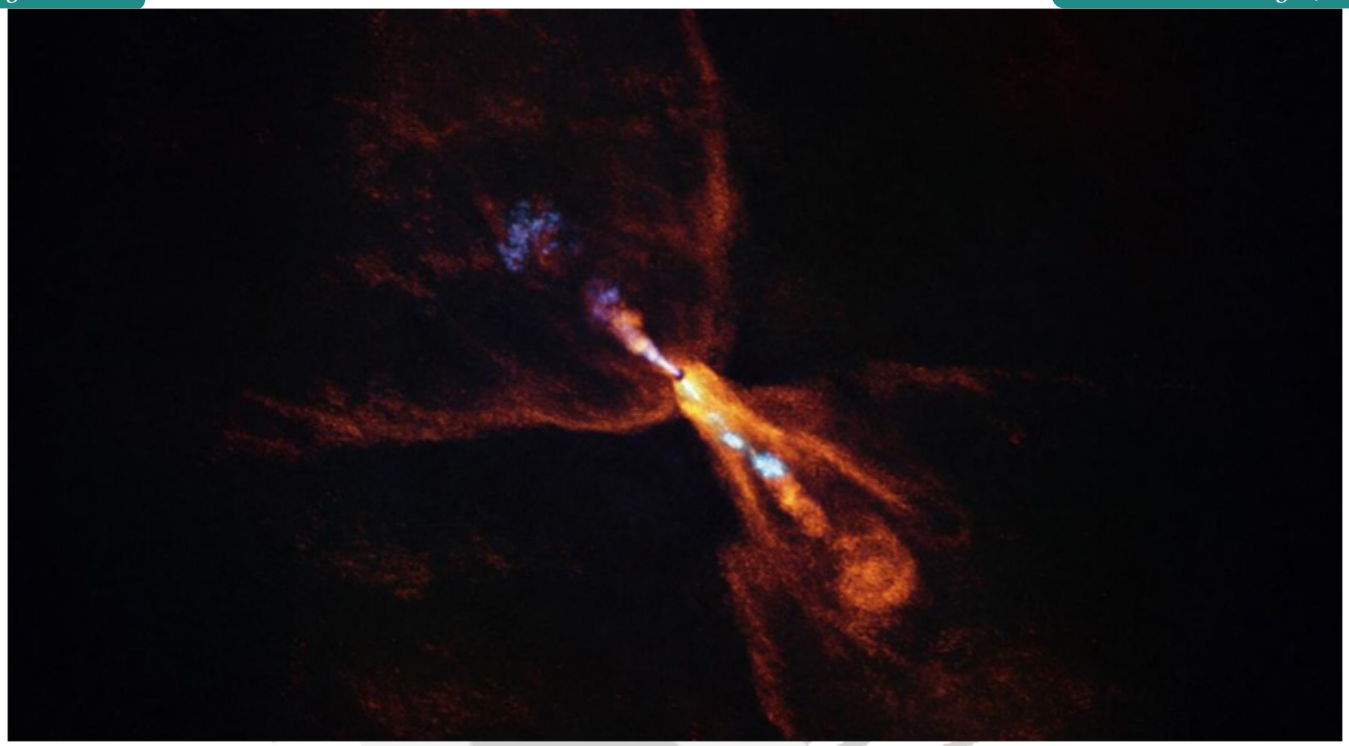
Crew Module (CM) and Service Module (SM):

- CM tested for re-entry, parachute deployment, thermal resistance.
- SM handles power, propulsion, and environmental control.
- Supporting Infrastructure:
- Gaganyaan Control Centre, training facility, and dedicated launch modifications at SDSC.
- Recovery operations plan and communication network fully established.

Star – HOPS-315

Context:

Astronomers have, for the first time, captured the condensation of solid rock from vapor around a newborn star — HOPS-315 — using the James Webb Space Telescope and ALMA, revealing the earliest stage of planet formation.



About Star – HOPS-315:

What is HOPS-315?

- Newborn Protostar: HOPS-315 is a young, still-forming star located in the Orion molecular cloud, surrounded by a dense protoplanetary disc of gas and dust.
- Tilted Disc Advantage: Its disc is uniquely inclined, allowing Earth-based telescopes a rare view deep into its planet-forming interior.

Key Observations:

- James Webb Space Telescope (JWST) detected strong silicon monoxide gas emissions (~470 K) and crystalline silicates within 2.2 AU of the star — the region where rocky planets may eventually form.
- ALMA identified cooler surrounding gases and confirmed the absence of slow-moving SiO, indicating the crystals were embedded in the rising disc atmosphere rather than in stellar outflows.
- Crystallisation Process: At around 1 AU from HOPS-315, computer simulations and real data suggest dust vaporised at ~1300 K, then re-condensed into minerals like forsterite, enstatite, and silica — similar to those in ancient Earth meteorites.
- First-Ever Direct Evidence: This is the first observational proof of rock vapor turning into solid crystals in another star system, capturing the earliest step of rocky planet formation.

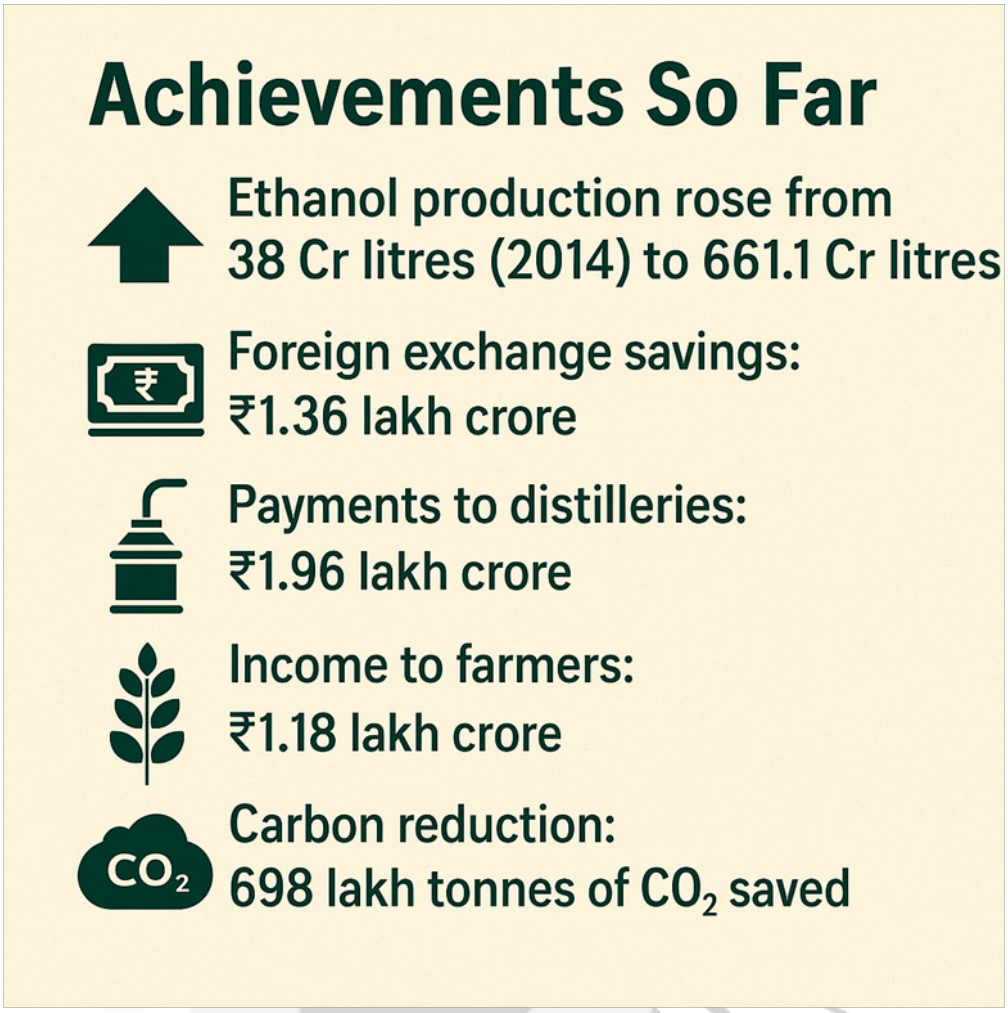
Significance of the Discovery:

1. Planet Formation Genesis: Offers direct insight into how rocky planets like Earth begin forming from vaporized rock.
2. Solar System Parallel: Mimics early processes from our own Solar System, bridging observational gaps in planetary evolution.
3. Rare Astronomical Window: Tilt of the disc allowed an unprecedented look at inner disc chemistry — rarely accessible in other systems.
4. Interstellar Mineral Match: Mineral types mirror chondritic meteorite inclusions, hinting at universal chemistry in rocky planet birth.

Ethanol Blended Petrol Programme

Context:

India has achieved 20% ethanol blending in petrol by 2025—five years ahead of the original 2030 target. This milestone was announced by Union Petroleum Minister.



About Ethanol Blended Petrol Programme:

What is the EBP Programme?

- The Ethanol Blended Petrol (EBP) Programme aims to blend ethanol with petrol to reduce reliance on fossil fuels, enhance energy self-sufficiency, and lower carbon emissions.

Launched & Ministry Involved

- Launched in 2003, scaled up post-2014.
- Implemented by the Ministry of Petroleum and Natural Gas, in coordination with the Ministry of Food Processing and Ministry of Agriculture.

Targets:

- Original target: 20% blending by 2030 (National Policy on Biofuels 2018).
- Achieved: 20% blending in 2025, 5 years early.

Objectives:

- Reduce crude oil imports, thereby saving foreign exchange.
- Support farmers by using surplus sugarcane and grains.
- Promote clean fuels for climate action.
- Boost the domestic ethanol industry and create rural jobs.

Key Features:

- Ethanol sourced from sugarcane juice, B-molasses, damaged grains.
- OMCs (Oil Marketing Companies) procure ethanol at pre-fixed prices.

- Recent Cabinet hike in ethanol procurement prices for Ethanol Supply Year 2024–25.
- Dedicated ethanol distilleries and storage infrastructure being promoted under SATAT and PLI

Significance:

- Helps meet India's Paris Climate targets and ethanol roadmap (NITI Aayog).
- Strengthens India's push for energy Atmanirbharta (self-reliance).
- Reduces air pollution in urban areas and boosts agro-economy in rural India.
- Catalyzes biofuel innovation and investment in green energy.

NISAR satellite

Context:

The NISAR satellite, jointly developed by NASA and ISRO, is scheduled to be launched on July 30, 2025 from Sriharikota using GSLV-F16, marking a milestone in Earth observation and space diplomacy.

About NISAR satellite:

What is NISAR?

- NISAR (NASA-ISRO Synthetic Aperture Radar) is the first dual-frequency Earth observation satellite using L-band and S-band synthetic aperture radar (SAR).
- It will capture high-resolution data across all weather conditions and during both day and night.

Organisations Involved:

- NASA (Jet Propulsion Laboratory): Provides L-band radar, communication systems, GPS, and data subsystem.
- ISRO: Contributes the S-band radar, satellite bus, launch vehicle (GSLV-F16), and launch services.

Objectives of NISAR:

- Monitor land surface deformation, glacier movement, and ecosystem dynamics.
- Study cryosphere changes, soil moisture, coastal and agricultural processes.
- Provide data for disaster response, resource mapping, and climate change impact assessment.

Key Features:

- Dual-Frequency SAR: First satellite to use both L-band (NASA) and S-band (ISRO) radar frequencies.
- Unfurlable Antenna: Equipped with a 12-meter mesh reflector antenna for high-precision imaging.
- SweepSAR Technology: Captures a swath of 242 km with 12-day revisit cycles.
- High Spatial Resolution: Detects surface changes less than 1 cm, crucial for fault line and landslide mapping.
- Global Coverage: Enables day-and-night, all-weather scanning of Earth's surface.

India's Contribution:

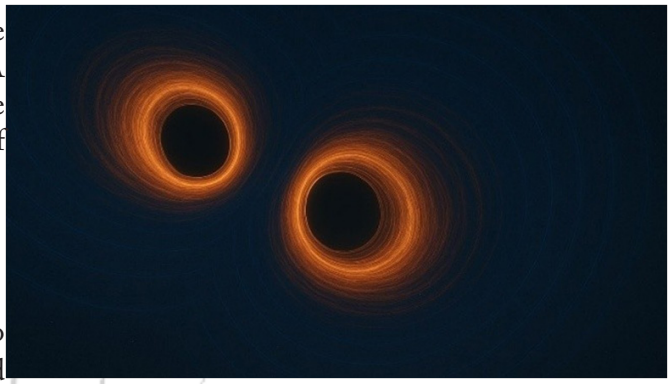
- ISRO is responsible for:
- S-band radar system
- Modified I3K satellite bus
- Launch through GSLV-F16
- Ground segment operations

Significance of NISAR:

- First of its kind Earth-observing mission with dual radar frequencies.
- Strengthens Indo-US space cooperation since the 2014 MoU.
- Supports Sustainable Development Goals (SDGs) via environmental monitoring.

Black Hole Merger GW231123

Context:



Scientists have detected GW231123, the largest black hole merger ever recorded, using the LIGO-Virgo-KAGRA (LVK) network, revealing black holes 100x and 140x the Sun's mass—a discovery that challenges existing theories of stellar evolution.

About Black Hole Merger GW231123:

What Is a Black Hole Merger?

- A black hole merger is a cosmic event where two black holes orbit each other, gradually spiral inward due to energy loss via gravitational waves, and eventually coalesce into a single, larger black hole. These mergers release immense energy, rippling across spacetime.
- Name of the Event: GW231123 – Detected during LIGO's fourth observation run.

How Did It Occur?

- Two massive black holes (140 and 100 times the Sun's mass) collided.
- Their merger created a super black hole about 225 solar masses.
- It defies the expected "mass gap" (60–130 solar masses) where black holes aren't supposed to form via normal stellar collapse.

Key Features of GW231123:

- Massive Scale: Largest known stellar-mass black hole merger.
- Spin Limit: One black hole spun near the maximum speed allowed by General Relativity.
- Deep Space Origin: Likely occurred up to 12 billion light-years away.
- Challenging Models: Suggests prior mergers or exotic astrophysical origins.
- Detection Network: Identified by LIGO (US), Virgo (Italy), and KAGRA (Japan) under the LVK collaboration.

Significant:

- Breaks Mass Barrier: Violates theoretical "mass gap" limit, forcing reassessment of stellar collapse physics and supernova models.
- New Formation Clues: May indicate second-generation mergers, i.e., black holes formed from prior black hole collisions.
- High-Spin Puzzle: Spins observed near the relativistic limit, making waveform modelling highly complex.
- Dark Universe Insights: Offers rare data from deep space unreachable via light-based instruments.

Short-Range Ballistic Missiles Agni-I and Prithvi-II

Context:

India successfully test-fired nuclear-capable short-range ballistic missiles Agni-I and Prithvi-II from the Integrated Test Range, Chandipur (Odisha), a day after Akash Prime was tested in Ladakh.

About Short-Range Ballistic Missiles Agni-I and Prithvi-II:

What Are They?

- Prithvi-II and Agni-I are short-range ballistic missiles (SRBMs) forming the backbone of India's nuclear deterrence strategy.
- Tested under the supervision of the Strategic Forces Command to validate technical and operational parameters.

- Location: Integrated Test Range (ITR), Chandipur, Odisha
- Developed By: DRDO (Defence Research and Development Organisation).
- Under India's Integrated Guided Missile Development Programme (IGMDP).

Objectives:

- Validate combat readiness, deterrence reliability, and technical accuracy of India's nuclear delivery systems.
- Strengthen second-strike capability and credibility of India's strategic arsenal.
- Reinforce operational readiness post the May 2025 Indo-Pak conflict.

Features of Prithvi-II Missile:

- Range: ~350 km
- Payload Capacity: Up to 500 kg.
- Warhead Types: Conventional and nuclear.
- Guidance: Advanced inertial navigation with high accuracy.
- Platform: Road-mobile launcher for flexible deployment.
- Speed: Mach 1+

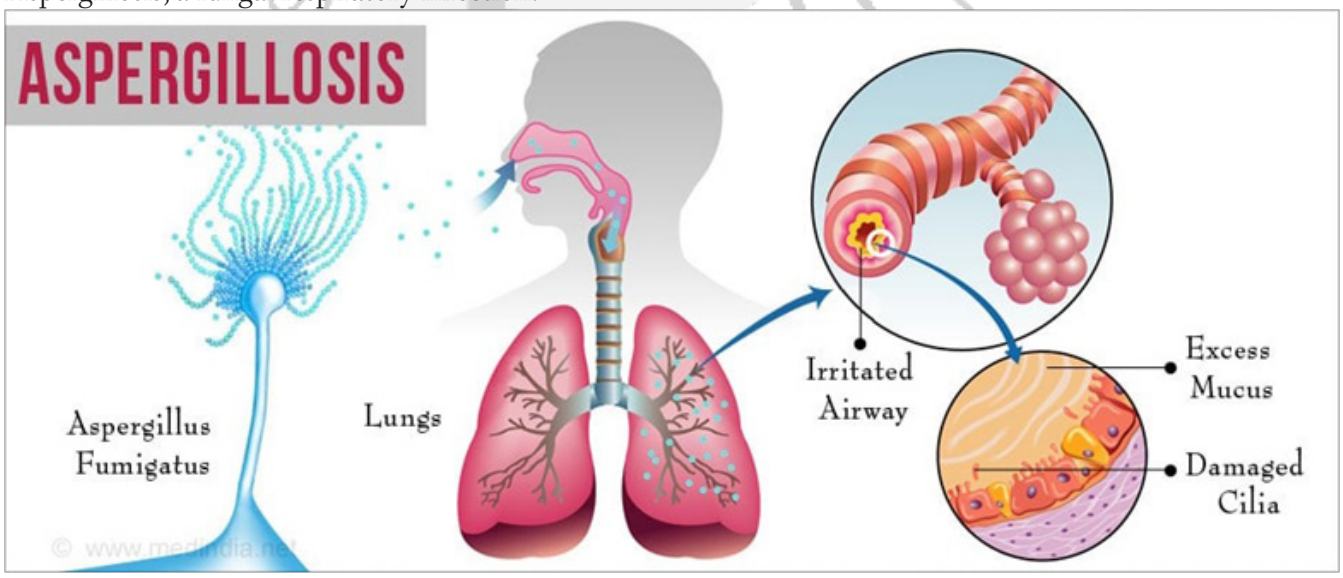
Features of Agni-I Missile:

- Range: 700–900 km.
- Payload Capacity: Up to 1,000 kg.
- Warhead Types: Conventional and nuclear.
- Accuracy: High accuracy with sophisticated guidance systems.
- Induction: Deployed in the Indian Army since early 2000s.
- Role: Critical part of India's minimum credible deterrence.

Aspergillosis

Context:

Pigeons in Indian cities, especially the Blue Rock Pigeon (Columba livia), are being wrongly blamed for rising cases of Aspergillosis, a fungal respiratory infection.



About Aspergillosis:

What is Aspergillosis?

- A respiratory infection caused by inhaling spores from Aspergillus, a genus of mold.
- Most commonly caused by Aspergillus fumigatus, which releases airborne spores.

Source and Transmission:

- Not contagious from person to person.
- Spread occurs through inhalation of spores found in:
- Soil, compost, dust, rotting vegetation

- Air ducts, damp walls, bird droppings, old grains
- Pigeons may contribute indirectly but are not the primary source.

Key Features of the Fungus:

- Ubiquitous and naturally present in urban and rural environments.
- Grows best in moist, poorly ventilated, or decaying areas.
- Spores are microscopic and easily inhaled in large quantities.

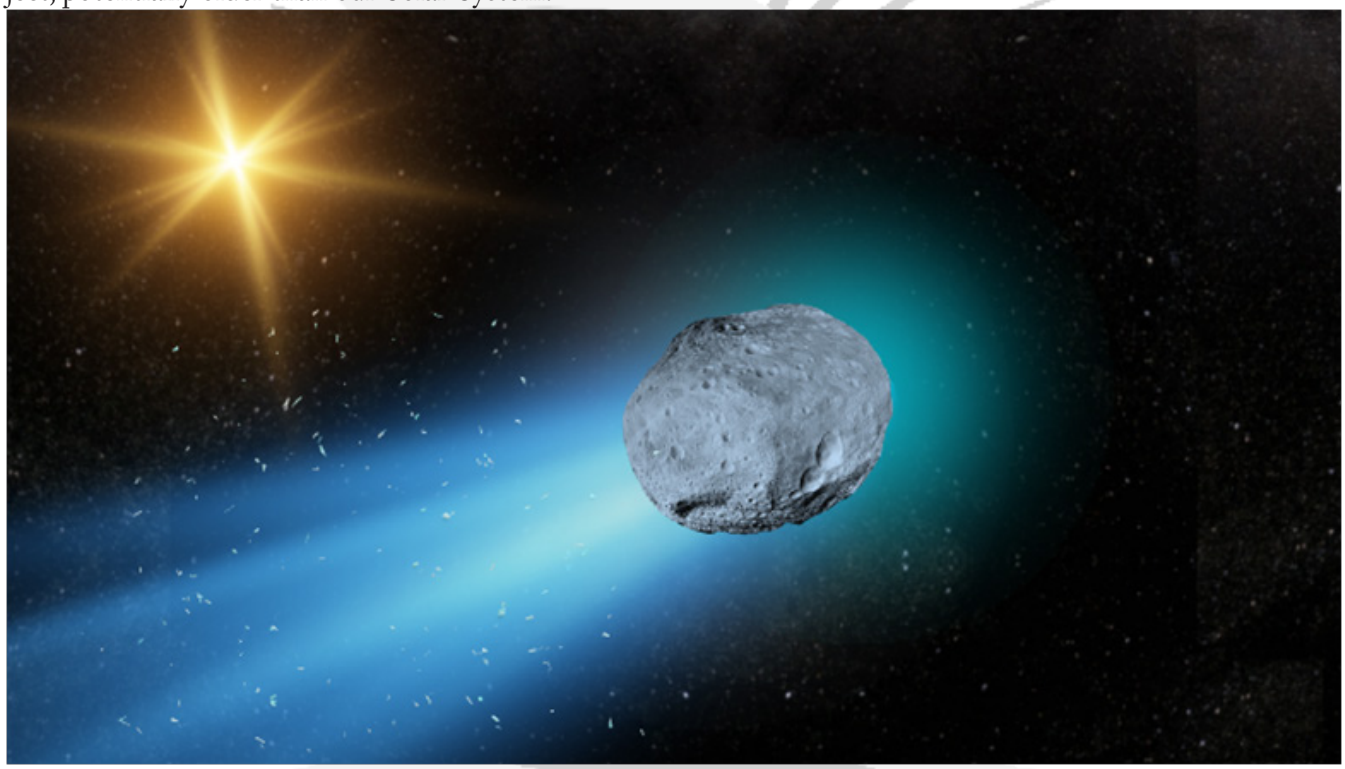
Symptoms of Aspergillosis:

- Persistent cough, chest pain, wheezing.
- Fever, shortness of breath.
- Coughing blood in advanced cases (chronic pulmonary aspergillosis).
- Treatment Options: Antifungal medications like voriconazole or itraconazole.
- Surgery in severe or invasive cases.

3I/Atlas – Third-Ever Interstellar Object

Context:

The object 3I/Atlas, discovered by the ATLAS telescope in Chile, has been confirmed as the third-ever interstellar object, potentially older than our Solar System.



About 3I/Atlas – Third-Ever Interstellar Object:

What is 3I/Atlas?

- Interstellar Origin: 3I/Atlas is a hyperbolically orbiting interstellar object, meaning it came from outside our solar system and is not gravitationally bound to the Sun.
- Discovery: It was spotted by the Asteroid Terrestrial-impact Last Alert System (ATLAS) in Río Hurtado, Chile, when it was around 670 million km from the Sun.

Key Features of 3I/Atlas:

- High Speed: It moves at ~60 km/s — too fast to be held by the Sun's gravity — confirming its interstellar nature.
- Current Distance: The object is now near Jupiter's orbit, about 917 million km from Earth.
- Oldest Known Comet: Scientists estimate its age to be 7 billion years, which is older than the 4.6-billion-year-old Solar System.

Significance of 3I/Atlas:

- Clues to Alien Worlds: Studying it may reveal the chemical and physical makeup of distant planetary systems.
- Rare Interstellar Sample: It gives humanity a direct connection to exoplanetary material, much before space travel allows such exploration.
- Builds on Past Discoveries: It follows 1I/ Oumuamua (2017) and 2I/Borisov (2019) as the only known interstellar visitors so far.

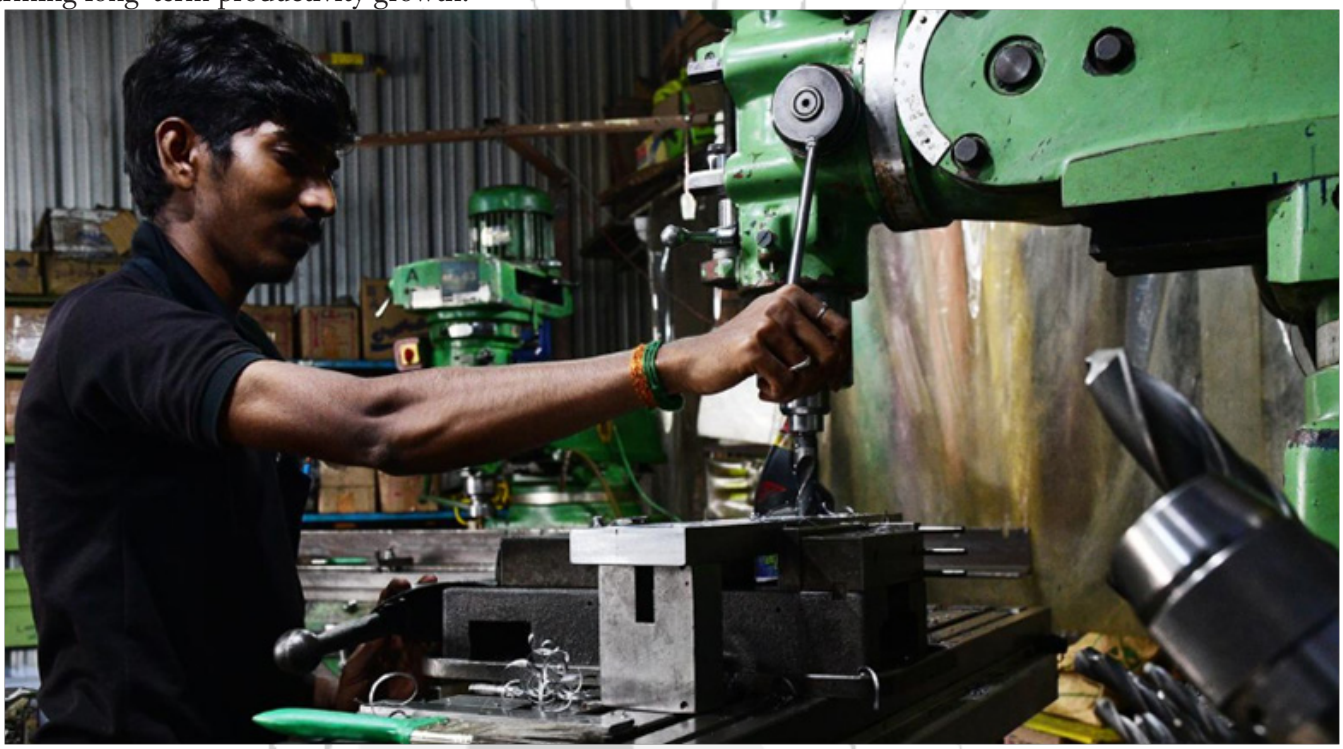
How Scientists Confirm It's Interstellar?

- Orbit Calculation: Its open hyperbolic trajectory lacks a returning aphelion, unlike native solar system objects that have elliptical paths.
- Initial Velocity: Its high approach speed at a great distance shows it didn't accelerate here — it came in fast, already moving from another system.

Adopt Formalisation to Power Productivity Growth in India's Manufacturing Sector

Context:

A recent study based on ASI data (1999–2019) shows that contractualization in India's formal manufacturing sector has risen from 20% to 40.7%, primarily driven by cost-avoidance rather than flexibility or skills, thereby harming long-term productivity growth.



About Adopt Formalisation to Power Productivity Growth in India's Manufacturing Sector:

Core Issue:

- India's formal manufacturing is experiencing an informalisation within formal structures, where contract labour is increasingly used not for enhancing efficiency or acquiring skills, but to reduce wage costs and bypass labour laws.

Key Findings from the Study:

1. Rising Contractualization:

- Contract labour in manufacturing doubled to 40.7% by 2022–23.
- This trend cuts across all sub-sectors, including large firms.

2. Wage Disparities and Exploitation:

- Contract workers earn 14.47% less on average than regular workers.
- In large enterprises, wage gaps widen to 31%; overall labour costs are 24% lower for contract workers.

3. Severe Productivity Gaps:

- 31% lower productivity in contract labour-intensive (CLI) firms than regular labour-intensive (RLI) ones.
- Gap widens to 42% in small labour-intensive CLI firms.
- High-skill or capital-intensive CLI firms (only 20%) show minor productivity gains (5–20%).

4. High Turnover, Low Training:

- Use of short-term contracts reduces workforce stability, discourages skilling and innovation, creating long-term productivity losses.

Structural Issues in Contractualization:

- Misaligned Incentives in Contracting: Third-party contractors often have no stake in long-term outcomes, leading to a principal-agent problem where firms and contractors pursue conflicting goals.
- Erosion of Work Discipline and Quality: Short-term job contracts reduce worker accountability, encouraging shirking behaviour and poor-quality output—classic manifestations of moral hazard.
- Deliberate Bypass of Labour Protections: Contractualization is misused to evade the Industrial Disputes Act, 1947, excluding workers from safeguards on retrenchment, layoffs, and fair dispute resolution.
- High Turnover and Training Disincentives: The transient nature of contract work increases attrition, discouraging firms from investing in on-the-job training, innovation, or skill upgradation.
- Weak Social Security and Welfare Gaps: Contract workers are often denied access to EPF, ESI, or maternity benefits, worsening economic insecurity and perpetuating informalisation within formal enterprises.

Policy Challenges in Regulating Contractualization:

- Stalled Execution of Labour Codes: The Industrial Relations Code, 2020—meant to formalise fixed-term hiring without middlemen—awaits state-level adoption, delaying systemic reform.
- Unregulated Expansion of Non-Permanent Jobs: By enabling flexible hiring, the new labour codes risk institutionalising precarity unless complemented by robust regulatory oversight.
- Union Pushback and Political Resistance: Labour unions fear that increased hiring flexibility will erode collective bargaining rights, stalling reforms through political opposition and litigation.
- Premature Withdrawal of PMRPY Incentives: Schemes like PMRPY (2016–2022), which subsidised EPF contributions to promote formalisation, were discontinued before achieving sectoral saturation.
- Poor Monitoring of Contractual Norms: Labour inspections remain weak, especially in MSMEs, allowing rampant misuse of contract labour without accountability or employer penalties.

Policy Recommendations:

- Implement Labour Codes Carefully: Ensure fixed-term contracts include basic benefits and rights to prevent disguised informalisation.
- Incentivise Longer Tenures: Offer social security contribution waivers or priority in government tenders for firms adopting longer fixed-term contracts.
- Revive PMRPY with Enhancements: Reintroduce the scheme with stronger accountability to promote formal hiring and reduce cost-based contractualization.
- Link Formalisation with Skilling: Provide subsidised access to skilling schemes (like PMKVY) only for firms with formal, stable employment contracts.
- Disincentivise Excessive Contractualization: Levy productivity-linked penalties or audit triggers if CLI usage exceeds thresholds in low-skill industries.

Conclusion:

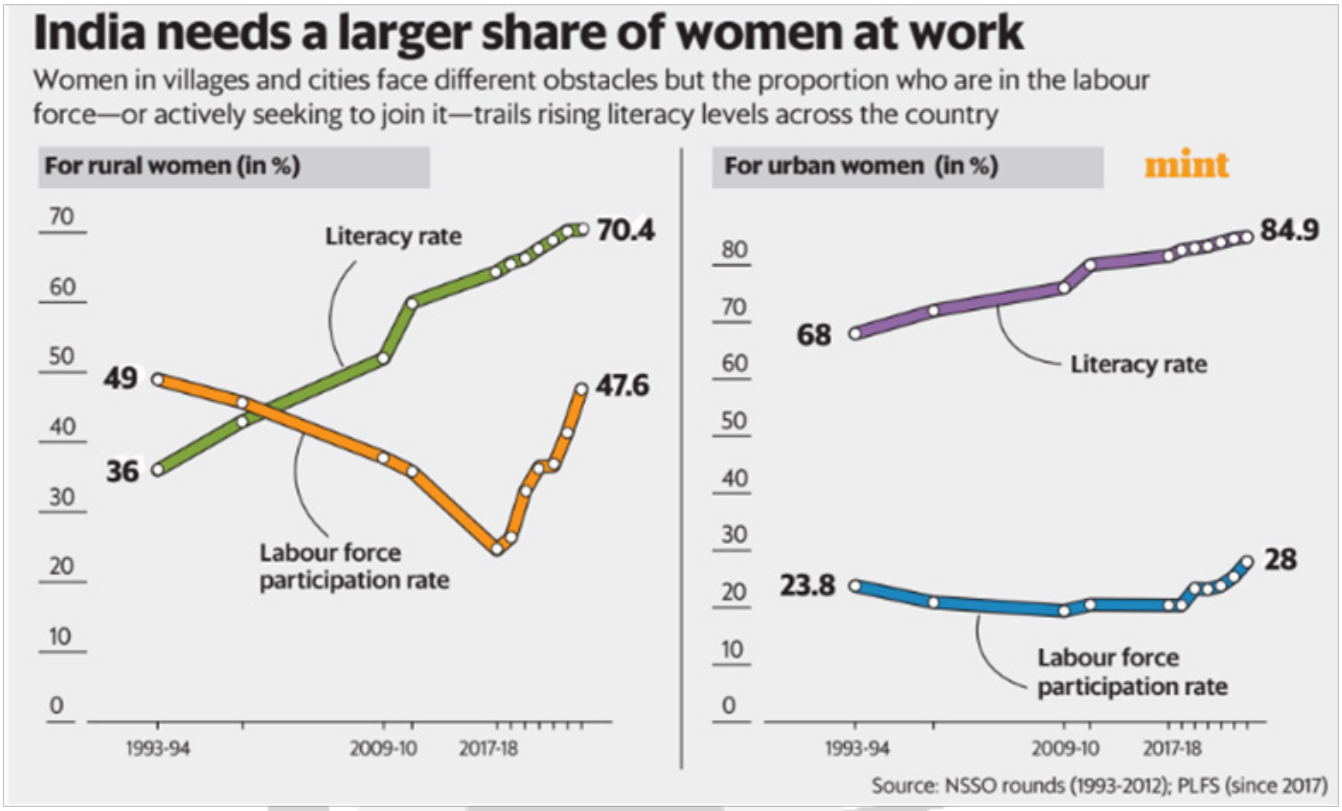
In the long run, cost-driven contractualization undercuts labour productivity, innovation, and industrial stability. India's journey toward higher economic growth must therefore adopt genuine formalisation, skill-based hiring, and long-term workforce development. A balanced approach that combines labour market flexibility with job quality assurance is critical for transforming Indian manufacturing into a globally competitive sector.

Female Labour Force Participation Paradox in India

Context:

Despite India's high female literacy—especially in urban areas—labour force participation among women remains low.

- PLFS 2023–24 highlights a stark rural-urban disconnect and a widening literacy–employment gap, raising concerns over inclusive economic growth.



About Female Labour Force Participation Paradox in India:

Key Trends (PLFS 2023–24 & World Bank 2024)

- Urban female literacy: 84.9%, yet FLFPR: 28%
- Rural literacy–FLFPR gap: ~22%, Urban gap: ~57%
- National female literacy: 74.6%, with a 33-point employment gap
- India lies between developed (40-point gap) and developing (25-point gap) nations

Causes Behind Low FLFPR: Structural and Social Disconnect:

- Urban Job Inflexibility: Most urban jobs, especially in services, lack flexibility for family responsibilities, deterring women's sustained participation.
- Mobility and Safety Concerns: Unsafe public spaces and lack of reliable transport limit women's access to formal work environments in cities.
- Informality and Job Insecurity: A majority of urban women work in informal sectors with low pay and no benefits, leading to job exit during life events.
- Childcare Deficit in Cities: With 61.3% urban households being nuclear (NFHS-5), lack of crèches forces women to prioritize caregiving over employment.
- Post-Maternity Workforce Dropout: Absence of re-entry programs or part-time opportunities leads to permanent dropout post-childbirth, creating a "care penalty."

Why Rural FLFPR Is Higher Than Urban?

- Flexible Work Options in Agriculture: Agriculture and self-employment offer women work close to home with adaptable hours, improving participation.
- Community-Based Childcare: Extended families and rural kinship networks help women manage both work and caregiving responsibilities.
- Work Out of Necessity: Rural women work due to economic compulsion, not autonomy, contributing to higher, though less empowered, FLFPR.
- Gender Norms Around Shared Labour: In rural settings, work by women—even if unpaid or low-paid—is more culturally normalized and expected.
- Crisis-Driven Employment: Post-COVID rural employment saw a temporary rise due to loss of urban jobs and return migration, not durable inclusion.

Shocking Trend: Declining FLFPR Despite Progress

2005–2019 Paradox

- Fertility rates dropped, education rose—but FLFPR fell.
- Higher incomes reinforced gendered roles—man as earner, woman as homemaker.

Post-COVID Spike in Rural FLFPR

- Driven by distress employment and fallback strategies, not systemic support.
- Urban FLFPR still stagnant despite digitisation and economic revival.

Implications for Economy and Equity:

- Loss of Demographic Dividend: Underutilisation of half the population weakens India's long-term productivity and growth potential.
- Stunted Social Development: Low female employment slows gains in child health, nutrition, education, and gender equity.
- Urban Middle-Class Retreat: Higher incomes reinforce traditional norms, causing women to withdraw from jobs when money isn't essential.
- Global Competitiveness Hit: India's low FLFPR limits its ability to compete with economies like Bangladesh or Vietnam on inclusive growth.
- Equity and Justice Crisis: Economic exclusion reinforces patriarchal structures and denies women equal access to opportunity and dignity.

Way Forward:

- Public Childcare Infrastructure: Expand anganwadis and urban crèches to support working mothers in both urban and peri-urban areas.
- Flexible Employment Models: Promote part-time work, gig platforms, and remote work to align with women's time and caregiving constraints.
- Legislative Reform for Dignity at Work: Ensure strong implementation of POSH Act and equal pay laws to create safe, respectful workplaces.
- Norms Transformation Campaigns: Launch nationwide efforts to normalize shared caregiving roles and women's right to work.
- Urban Infrastructure for Inclusion: Invest in safe transport, women-only toilets, and creche-linked workplaces to make cities gender-inclusive.

Conclusion:

India's low FLFPR is not merely a data problem—it reflects a deeper gendered social contract. As we progress towards a $5 trillion economy, ensuring equitable economic participation of women—both rural and urban—is no longer a social ideal but an economic imperative. Neither rural resilience nor urban infrastructure alone is enough. A combined structural overhaul and social shift is the need of the hour.

Stablecoins

Context:

US President Donald Trump signed the GENIUS Act, marking America's first federal framework for stablecoins pegged to the US dollar, reigniting global interest in regulated digital currencies.

About Stablecoins:

What Are Stablecoins?

- Stablecoins are blockchain-based digital currencies designed to maintain a stable value by pegging themselves to a reference asset, typically a fiat currency like the US dollar.

Developed By:

- Private issuers such as Tether (USDT), Circle (USDC), and MakerDAO (DAI).
- Supervised and audited under specific jurisdictional laws; now federally regulated in the US via the GENIUS Act.

Objectives of Stablecoins:

- Provide price stability unlike volatile cryptocurrencies.
- Enable efficient digital payments, especially for cross-border and decentralised transactions.
- Serve as liquidity anchors in the crypto ecosystem.

Key Features:

1. Pegged Value: Usually anchored to fiat (USD), commodity (gold), or crypto reserves.

2. **Reserve Mechanism:**

- Fiat-collateralised (e.g. USDC)
- Crypto-collateralised (e.g. DAI)
- Algorithmic (e.g. TerraUSD – now defunct)
- Commodity-backed (e.g. PAX Gold)

3. Blockchain-Enabled: Allow real-time, borderless, programmable payments.
4. Regulatory Disclosure: Under the GENIUS Act, issuers must maintain 100% reserve, ensure monthly audits, and prioritise consumer protection.
5. Smart Contract Compatibility: Used extensively in DeFi protocols for lending, liquidity, and trading.

Significance:

- Financial Inclusion: Offers payment tools in countries with weak banking infrastructure.
- Reduced Transaction Costs: Enables faster, cheaper cross-border transfers.
- Hedge Against Volatility: Investors use them as a digital safe-haven during crypto downturns.

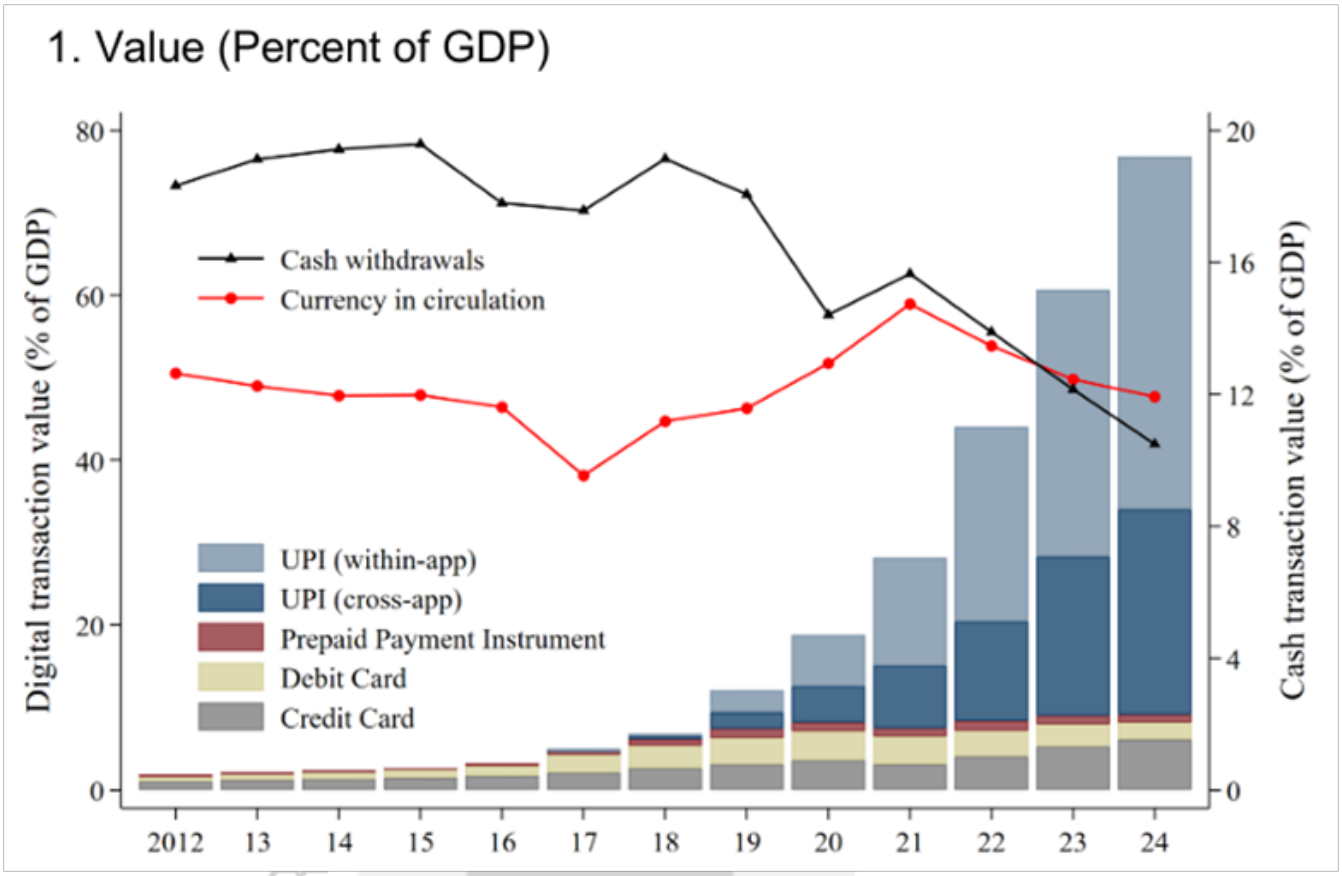
Stablecoins vs CBDCs:

Feature	Stablecoins	CBDCs
Issuer	Private entities (e.g. Tether, Circle)	Central banks (e.g. RBI, US Fed)
Backing	Pegged to fiat, crypto, or commodities via reserves or algorithms	Directly backed by sovereign currency
Legal Status	Varies across countries; recently recognized in US under GENIUS Act	Full legal tender status
Risk	Prone to counterparty risk, reserve mismanagement	Low risk, since issued by central bank
Use Case	Mostly in crypto ecosystem, DeFi, cross-border payments	Intended for mainstream retail and wholesale use
Control & Transparency	Depends on issuer's governance and audits	Fully regulated, monitored, and programmable by state

India Becomes Global Leader In Fast Payments – IMF Report

Context:

India has become the global leader in real-time payments as UPI processed 18.39 billion transactions in June 2025, according to an IMF-supported report.



About India Becomes Global Leader In Fast Payments – IMF Report:

What the Report is?

- Jointly developed by the International Monetary Fund (IMF) and FIS Global, this Fast Payments Report 2025 analyses global public digital infrastructure.
- It uses a new metric: Faster Payment Adoption Score (FPAS) to benchmark digital payment adoption.

India's Achievements:

- Top Global Rank (FPAS: 87.5%): India leads 30 countries, surpassing Brazil, Singapore, UK, and USA.
- UPI Scale: Processes over 640 million transactions daily, serving 491 million individuals and 65 million merchants via 675 banks.
- Speed and Cost: Delivers payments within 5 seconds, with near-zero cost per transaction.
- Global Reach: UPI is now operational in 7 countries, including France, UAE, and Singapore.
- BRICS Integration: India is advocating UPI as a cross-border payment standard among BRICS+ nations.

Key Features of India's UPI Ecosystem:

- Interoperability: Unified interface across banks and apps like PhonePe, GPay, Paytm.
- Inclusiveness: Aadhaar-linked, USSD-enabled, multilingual access—enabling rural digital payments.
- Innovation Stack: Built atop India Stack (Aadhaar, eKYC, DigiLocker, Account Aggregator).
- Security Protocols: Real-time fraud detection, tokenisation, and regulatory compliance.
- Govt–Private Partnership: NPCI + fintech startups + RBI = scalable, resilient digital infrastructure.

Limitations of UPI:

- Low Offline Penetration: UPI still requires internet connectivity for most users, limiting adoption in remote or low-bandwidth areas.
- Interoperability Gaps Abroad: Despite global expansion, UPI's cross-border utility is constrained due to lack of uniform regulatory standards and infrastructure in partner countries.
- Data Privacy Concerns: The report warns of inadequate user data protection laws, raising concerns about misuse or over-collection of personal financial data.
- Fragmented Dispute Resolution: Complaint redressal remains weak and unstandardized across UPI apps and banks, reducing user trust in case of failed or fraudulent transactions.

- Overdependence on Mobile-First Access: UPI is not fully accessible to senior citizens, non-digital natives, or those without smartphones, risking digital exclusion.

Way Ahead:

- Build Robust Offline Capability: Expand USSD and NFC-based UPI Lite+ to ensure reach in rural, low-connectivity zones.
- Global Regulatory Alignment: Collaborate with central banks to harmonize data security, authentication, and settlement systems for UPI's cross-border use.
- Strengthen Legal Frameworks: Introduce a comprehensive Digital Payments Consumer Protection Act to address data misuse and transaction failures.
- Inclusive Design Principles: Promote accessibility features (voice-assisted UPI, vernacular UIs) for elderly, disabled, and digitally illiterate populations.
- Unified Grievance Redressal Platform: Create a central, AI-assisted resolution portal for UPI complaints, integrated with NPCI and RBI systems.

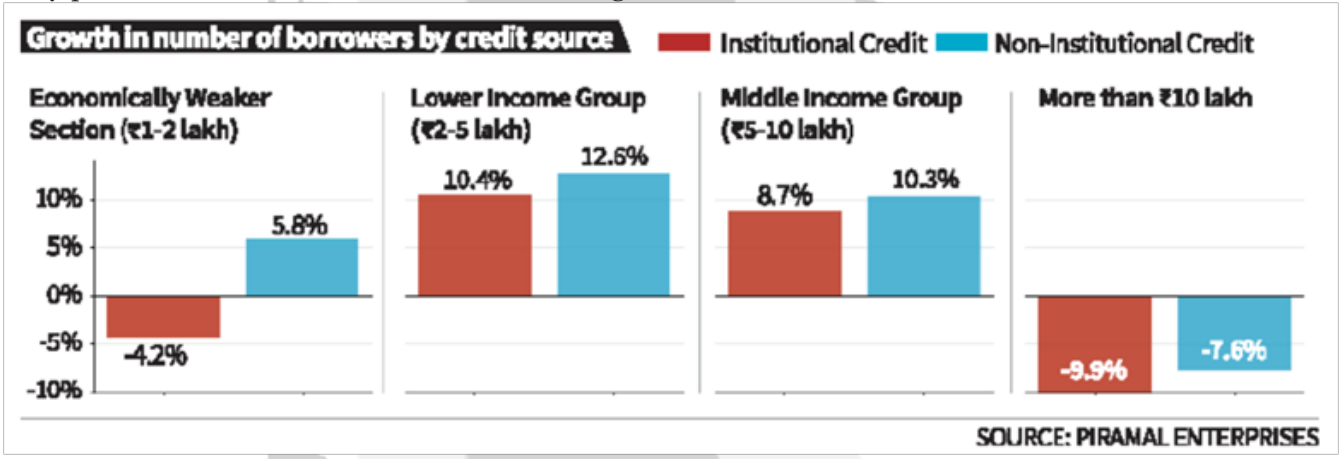
Conclusion:

UPI's rise as a global digital payments model showcases India's innovation in public digital infrastructure. However, bridging accessibility, legal, and global compatibility gaps is crucial to sustaining this success. A future-ready, inclusive, and secure UPI can be a blueprint for the world's digital economies.

Informal Credit in India

Context:

Despite nearly universal bank account penetration in India, fresh data (CMIE, Piramal Enterprises) show a sharp shift by poor households towards informal borrowing, due to limited access to formal credit channels.



About Informal Credit in India:

What Is Informal Credit?

- Credit from non-regulated entities like moneylenders, pawnshops, friends/family, chit funds.
- Typically lacks transparency, documentation, or consumer protection.

Recent Trends and Shifts:

- 96% of Indian households have at least one bank account (NFHS-5, 2021).

Despite this, credit access remains skewed:

- 4.2% fall in formal credit among poor households (CMIE 2023).
- 5.8% rise in informal borrowing by those earning 1–2 lakh annually.
- 75% of rural adults still rely on informal credit in some form (NABARD Financial Inclusion Survey, 2019).
- 1.4 lakh crore was the estimated outstanding informal credit as of 2022 (CRISIL report).

Implication:

- Banks and NBFCs reluctant to lend to high-risk low-income groups.
- Lack of documentation, collateral, or stable income proof blocks formal credit access.
- Credit demand–supply mismatch: Formal sector unable to match localised, immediate lending needs.

Catastrophe Bonds (Cat Bonds)

Context:

India's growing vulnerability to climate disasters has reignited policy interest in catastrophe bonds (cat bonds) as a financial instrument for disaster-risk financing.

About Catastrophe Bonds (Cat Bonds):

What are Cat Bonds?

- Catastrophe bonds (cat bonds) are insurance-linked securities that convert disaster risk into tradable financial products. They transfer the financial risk of natural disasters—like earthquakes, cyclones, and floods—from governments or insurers to global capital markets.

How Do Cat Bonds Work?

- Sponsorship: A government or insurance entity (the sponsor) issues the bond and pays a premium.
- Issuance: Intermediaries like the World Bank or ADB issue the bond to investors to reduce counterparty risk.
- Trigger Event: If a predefined disaster occurs (e.g., a 7.0 magnitude earthquake), investors lose part or all of the principal, which goes to the sponsor for relief and recovery.
- No Disaster: If no disaster occurs, investors receive regular high-yield interest (coupon payments), and the principal is repaid at maturity.

Key Features of Cat Bonds:

- High-Yield Returns: Investors earn higher interest rates due to the risk of principal loss.
- Parametric Triggers: Pay-outs are linked to measurable event thresholds (e.g., wind speed, Richter scale magnitude).
- Independence from Market Risk: Natural hazards are uncorrelated with stock market fluctuations, offering true portfolio diversification.
- Fast Disbursal: Enables quick financial assistance post-disaster, reducing reliance on slow government processes.

Significance of Cat Bonds:

- Disaster-Resilient Public Finance: Shields national budgets from sudden fiscal shocks after natural calamities.
- Regional Risk Pooling: A South Asian cat bond can distribute risk and lower premiums for countries with shared vulnerabilities.
- Investment Diversification: Pension funds and global investors prefer cat bonds to hedge against financial market risks.

Limitations:

- Payout Gaps: Bonds with narrowly defined triggers may deny pay-outs despite real damage.
- Perception of Waste: If no disaster occurs, high premiums may be politically questioned.
- Design Sensitivity: Requires transparent modelling, actuarial accuracy, and robust data to avoid failure.

8 Years of GST

Context:

India marks 8 years of Goods and Services Tax (GST) implementation, with automation significantly improving IGST refund processing for exporters.

About 8 Years of GST:

What is GST?

- A comprehensive, multi-stage, destination-based indirect tax that subsumes major central and state taxes (excise, VAT, service tax).
- Aims to create a unified national market with seamless input tax credit and reduced tax cascading.
- Launched On: 1st July 2017, following the enactment of the Constitution (101st Amendment) Act, 2016.

Key Features:

1. Dual GST Model: Centre levies CGST; States levy SGST.
2. One Nation, One Tax: Unified indirect tax structure for goods and services.
3. Technology-Driven: Uses GSTN for registration, return filing, and compliance.
4. Input Tax Credit: Allows credit of input tax across the supply chain.
5. Zero-Rated Exports: Ensures no tax burden on exports (via refund or LUT mechanisms).

Achievements in 8 Years:

1. Widened Tax Base: GST taxpayer base grew to over 1.45 crore by 2025.
2. Revenue Milestone: Monthly GST collections averaged 1.65 lakh crore in FY25, with a record high of 2.10 lakh crore in April 2025.
3. Improved Refund Processing: IGST refunds now processed within one week via Customs ICEGATE portal and 1.18 lakh crore refunded in FY25.
4. Ease of Doing Business: Automation has reduced refund time, improving export competitiveness.
5. Common National Market: Reduced tax barriers and logistics costs across states.

Shortcomings of GST:

1. Refund Delays under GST Officers: Refunds filed via GST portal can take up to 90 days, unlike automated IGST refunds (within 7 days).
2. Tech-Compliance Gaps: Disparities between Customs and GST systems hamper seamless verification.
3. Complexity in Return Filing: Technical glitches and reconciliation issues persist for small businesses.
4. Compliance Burden: Frequent notifications, rate changes, and portal issues increase procedural complexity.
5. Limited Fiscal Autonomy for States: States express concerns over revenue dependence on Centre.

Way Forward:

1. Integrate GST and Customs Systems: Real-time data sharing to expedite cross-platform refund processing.
2. Enhance Automation for All Refunds: Extend automated workflows to GST officer-led refunds.
3. Simplify Compliance for MSMEs: Introduce graded reporting and single-page returns for small taxpayers.
4. Strengthen GST Appellate Mechanisms: Ensure timely disposal of disputes for improved taxpayer confidence.
5. Institutionalise GST 2.0: Review rate structure, expand tax base (including fuel/alcohol), and stabilize tax governance.

Conclusion:

Eight years of GST represent a transformational journey in India's indirect tax regime. While automation has streamlined exporter refunds, systemic and procedural gaps need urgent attention. To unlock its full potential, GST must evolve into a more agile, transparent, and taxpayer-friendly system.

Sohrai Art

Context:

Sohrai Art from Jharkhand was spotlighted at Kala Utsav 2025 held at Rashtrapati Bhavan, where President of India hailed it as reflecting "the soul of India."

About Sohrai Art:

What is Sohrai Art?

- Sohrai is the Santhal, Munda, and Oraon tribes.
- It is traditionally a ritual wall painting tradition practiced by tribal communities of Jharkhand, particularly created by women on the mud walls of houses using natural pigments and bamboo twigs.

When it's celebrated:

- Painted during harvest festivals, especially Diwali, to honour livestock and fertility of the land.
- It is both a thanksgiving ritual and a celebration of agrarian life and womanhood.

Geographic Region:

- Practised across Hazaribagh, Santhal Parganas, and bordering areas of Bihar.
- Spread from cave art traditions to village homes across eastern India.

Key Features of Sohrai Art:

- Nature-Inspired Motifs: Depicts animals, birds, trees, and rural life scenes symbolizing harmony with nature.
- Natural Pigments: Uses earth-based colors like red ochre, white kaolin, black manganese, and yellow clay.
- Traditional Tools: Bamboo twigs, chewed sticks, and cloth rags are used instead of modern brushes.
- Women-Led Art: Entirely practiced and passed down by tribal women, reflecting feminine creativity and continuity.
- Ritualistic Timing: Painted during Diwali and harvest, linked to thanksgiving for livestock and agrarian prosperity.

Cultural Significance:

- Represents sustainability, spiritual ecology, and livelihood resilience.
- Symbolises the fusion of mythology, agriculture, and femininity.
- Seen as a living tradition passed orally and artistically across generations.

PM Viksit Bharat Rozgar Yojana (PM-VBRY)

Context:

The PM Viksit Bharat Rozgar Yojana (PM-VBRY) will come into effect from 1st August 2025 to incentivize large-scale job creation, replacing the Employment Linked Incentive (ELI) Scheme.

About PM Viksit Bharat Rozgar Yojana (PM-VBRY):

What it is?

- A national employment-linked incentive scheme to promote job creation in formal sectors, especially manufacturing, as part of the Viksit Bharat initiative.
- Launch Date: Effective from 1st August 2025
- Administered By: Ministry of Labour and Employment
- Total Outlay: 99,446 crore
- Implementation Period: 2025–2027
- Target: Over 3.5 crore new jobs, including 1.92 crore first-time workers

Objective:

- To promote inclusive and sustainable job creation.
- To incentivize employers for hiring new workers, especially in manufacturing.
- To support first-time employees entering the formal workforce

Key Features of PM-VBRY:

- Part A: Incentive for First-Time Employees
- Eligibility: New EPFO-registered employees with monthly salaries up to 1 lakh.

Incentive: One-month EPF wage (up to 15,000), paid in two instalments:

- 1st instalment: After 6 months of service
- 2nd instalment: After 12 months and completion of financial literacy training
- Saving Habit Promotion: Part of the incentive will be locked in a deposit account for future withdrawal.

Part B: Incentive for Employers

- Focus Sector: All sectors, with special focus on manufacturing
- Employer Eligibility: EPFO-registered entities hiring:
- 2 or more additional employees (if existing staff <50)
- 5 or more (if staff ≥50)

Wage-based Incentive (per employee per month):

- 1,000 for wages ≤ 10,000
- 2,000 for 10,001– 20,000
- 3,000 for 20,001– 1,00,000
- Tenure: 2 years for all sectors; extended to 4 years for manufacturing

Payment Mechanism:

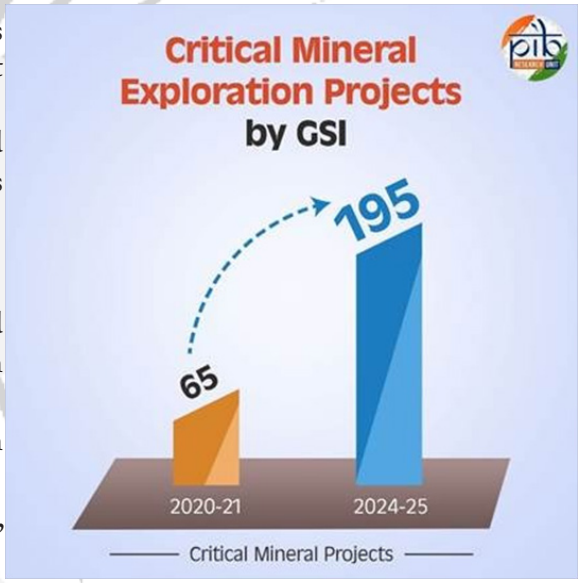
- First-Time Employees: Paid via DBT using Aadhar Bridge Payment System (ABPS).
- Employers: Direct payment to PAN-linked bank accounts.

Critical minerals are a strategic asset

Context:

India's push for clean energy, electronics, and strategic technologies has placed critical minerals like lithium, cobalt, and rare earths at the center of policy discourse.

- The National Critical Mineral Mission (NCMM) and recent export restrictions by China have highlighted India's vulnerability and the need for self-reliance.



About Critical minerals are a strategic asset:

- Definition: Minerals essential to economic security and clean energy, with limited domestic availability and high geopolitical risk.
- Examples: Lithium, Cobalt, Nickel, Graphite, Rare Earth Elements, Silicon.
- Importance: Core to EVs, solar panels, semiconductors, wind turbines, defence, and telecom.

Strategic Importance for India:

- Energy Transition: 100% import dependence on lithium, cobalt, and rare earths threatens India's EV and battery plans.
- Tech Sovereignty: Strategic autonomy in telecom, AI, defence depends on mineral access.
- Geopolitical Leverage: Reducing China-centric dependence helps assert India's position in the Indo-Pacific and Quad.
- Industrial Ambitions: PLI schemes for electronics, EVs, and solar require secure raw material input.
- National Security: Rare earths are vital for surveillance, navigation, and missile systems.

Key Policy Measures by India:

1. National Critical Mineral Mission (NCMM):

- Formed in 2024 under Ministry of Mines.
- Mandate: Secure critical mineral supply chains through exploration, refining, and strategic reserves.

2. Amendment to MMDR Act:

- Allowed auction of 30 identified minerals.
- 5 auction rounds concluded; over 400 exploration projects planned.

3. International Partnerships:

- Mineral Security Partnership (MSP) with U.S., Australia.

- Bilateral MoUs with Argentina, Bolivia for lithium.
- Engagement via Quad, G20, BRICS.

Challenges in India's Critical Mineral Ecosystem:

High Import Dependence:

- India imports 100% of lithium, cobalt, rare earths.
- China controls 70–90% of midstream processing globally.

Underdeveloped Domestic Capacity:

- Only preliminary exploration underway.
- Refining, separation, and value addition infrastructure lacking.

Weak Private Sector Participation:

- Auctions saw low interest due to technical and financial entry barriers.

ESG and Tribal Concerns:

- Most mineral blocks lie in ecologically or tribally sensitive areas.
- Legal delays due to poor Environmental, Social, and Governance compliance.

Lack of Circular Economy Infrastructure:

- Battery and e-waste recycling is informal and fragmented.
- No formal collection/dismantling infrastructure or incentives.

Strategic Way Forward:

Midstream Infrastructure Development:

- Create mineral processing zones with PLI-style incentives.
- Encourage public–private partnerships in refining and conversion tech.

Strengthen Exploration and Auctions:

- Build GSI's survey capabilities.
- De-risk projects for investors with geodata and viability gap funding.

Green and Inclusive Mining:

- Mandate ESG frameworks, third-party audits, and community benefit-sharing.
- Ensure fast environmental clearances without compromising on standard.

Build Circularity:

- Invest in formal battery/electronics recycling infrastructure.
- Provide tax breaks, subsidies for high-efficiency recovery systems.

Diversify Global Supply Chains:

- Pursue "friendshoring" with trusted nations.
- Leverage diplomacy to ensure stable, long-term mineral trade pacts.

Conclusion:

Critical minerals are the backbone of future industrial, environmental, and strategic advancement. While India has taken bold initial steps through NCMM, its success depends on sustained policy reforms, global alignment, and ecosystem capacity-building. The roadmap ahead must embrace self-reliance (Atmanirbharta) while ensuring sustainability, community equity, and strategic foresight.

Meri Panchayat app

Context:

The "Meri Panchayat" app has been awarded the WSIS Prizes 2025 Champion Award in the category of Cultural and Linguistic Diversity at the WSIS+20 High-Level Event in Geneva, recognizing India's innovation in grassroots digital governance.

About Meri Panchayat app:

What is It?

- "Meri Panchayat" is a mobile-based m-Governance platform designed to empower rural citizens and Panchayati Raj Institutions (PRIs) by making Panchayat-level data accessible, interactive, and transparent.
- Developed By: Jointly developed by the Ministry of Panchayati Raj and the National Informatics Centre (NIC) under the Ministry of Electronics and IT.

Objectives:

- Promote digital inclusion in rural areas.
- Enhance transparency and accountability in Gram Panchayat operations.
- Strengthen participatory democracy and citizen engagement.
- Bridge the knowledge and information divide at the grassroots.

Key Features

- Real-time Information: Access Panchayat-level budgets, payments, and development plans.

Civic Engagement:

- View Gram Sabha agendas, decisions, and GPDPs (Gram Panchayat Development Plans).
- Citizens can propose new projects, rate completed works, and submit feedback.

Geo-Features:

- Geo-tagging and geo-fencing for projects and grievance redressal.
- Multilingual Interface: Available in 12+ Indian languages to ensure inclusivity.
- Weather & Infrastructure Data: Panchayat-wise weather forecasting, civic assets, and service details.
- Social Audit Tools: Transparency in fund utilization and performance tracking.

Award Recognition:

- Honoured with the WSIS Champion Award 2025 in the "Cultural Diversity and Local Content" category.
- Awarded at the WSIS+20 High-Level Event hosted by ITU, UNESCO, UNDP, and UNCTAD.
- Recognized globally as a model of citizen-centric, digital rural governance.

Swachh Survekshan 2024–25

Context:

Ahmedabad emerged as the cleanest big city in the Swachh Survekshan 2024–25. The awards were conferred by President Droupadi Murmu during a national felicitation event.

About Swachh Survekshan 2024–25:

- Conducted by: Ministry of Housing and Urban Affairs (MoHUA).
- Objective: Promote competitive spirit among cities for cleanliness and sanitation.
- Framework: Based on "One City, One Award" and includes parameters like GFC star rating, source segregation, toilet access, and beautification.
- Participation: 4,500+ cities, 14 crore citizens engaged via face-to-face, apps, and digital platforms.
- New Additions: "Super Swachh League" and revamped categorization across five population segments.

Winners 2024–25:

- Cleanest Big Cities (10 lakh+): Ahmedabad (1st), Bhopal (2nd), Lucknow (3rd).
- 3–10 Lakh Category: Mira-Bhayandar (1st), Bilaspur (2nd), Jamshedpur (3rd).
- Best Ganga Town: Prayagraj.
- Best Cantonment Board: Secunderabad Cantonment.
- SaifaiMitra Surakshit Shehar (Sanitation Worker Safety): Visakhapatnam, Jabalpur, Gorakhpur.
- Super Swachh League Inductees (23 cities): Indore, Surat, Navi Mumbai, Vijayawada, Chandigarh, Mysore, etc.

About Super Swachh League (SSL):

What It Is?

- The Super Swachh League is a new category introduced in Swachh Survekshan 2024–25 to honour cities showing sustained excellence in urban sanitation and cleanliness over multiple years.
- Objective: To create a premier league of consistently high-performing cities across population brackets, promoting competitive excellence and peer benchmarking.

Eligibility Criteria:

- Cities must have a minimum Garbage Free City (GFC) star rating, ideally 3-star or above.
- Must consistently rank high in Swachh Survekshan across key parameters like door-to-door waste collection, source segregation, ODF++ status, and citizen engagement.

Population-based segmentation:

- Above 10 lakhs (e.g., Ahmedabad, Indore, Surat).
- 3–10 lakh (e.g., Noida, Chandigarh, Mysuru).
- Below 3 lakh and below 1 lakh (with defined benchmarks).

Key Trends Highlighted:

- Rise of Mid-Tier Cities: Cities like Bilaspur and Jamshedpur are outperforming major metros in sanitation metrics, showing decentralised progress.
- 3R Push (Reduce, Reuse, Recycle): The survey promoted 3R as a guiding principle, integrating sustainability into everyday urban behaviour.
- Scientific Waste Management: 12 cities earned 7-star and 22 cities secured 5-star Garbage Free City certifications, reflecting improved waste processing.
- Inclusivity for Small Cities: Revised scoring methods enabled towns with populations below 1 lakh to compete fairly with big cities.
- Public Engagement: Over 14 crore citizens participated via surveys, apps, and community events—an all-time high.

Best Practices Recognized:

- Waste-to-Wealth Innovations: Artistic tokens made from recycled waste were gifted to dignitaries, symbolising creative reuse
- Peer Mentorship Model: Top 78 cities will each mentor one underperforming city under the "Each One Clean One" initiative.
- Dumpsite Remediation Drive: A focused 1-year campaign starting Aug 15, 2025, will clean up legacy waste and reclaim urban land.
- Clean Kumbh Management: Prayagraj efficiently managed sanitation for 66 crore devotees at the Maha Kumbh, showcasing mega-event waste planning.
- Sanitation Worker Safety: Cities like Gorakhpur, Jabalpur, and Visakhapatnam were honoured for ensuring dignity and safety for Safai Mitras.

Significance:

- Urban Transformation: Survey results indicate a shift in citizens' mindset—from compliance to commitment toward cleanliness.
- Youth & Job Creation: The focus on circular economy has led to startups, SHG enterprises, and green employment in waste management.
- Benchmarking Tool: The survey serves as a performance mirror, pushing cities to improve service delivery and adopt innovation.
- Viksit Bharat 2047 Vision: Clean cities are critical to the broader goal of a developed India by 2047.
- Women & SHG Engagement: Women-led groups and school campaigns are playing key roles in zero-waste and segregation drives.

Conclusion:

Swachh Survekshan 2024–25 showcases India's urban sanitation shift from compliance to commitment. It celebrates city-level innovation, grassroots participation, and national resolve for a cleaner, sustainable future. Cleanliness is no longer a mission — it is becoming civic culture.

Akash Prime Missile System

Context:

India successfully conducted a high-altitude trial of the Akash Prime missile system in Ladakh, marking a major milestone in indigenous air defence capabilities.

About Akash Prime Missile System:

What is Akash Prime?

- Akash Prime is an upgraded version of the Akash Surface-to-Air Missile (SAM) developed by DRDO. It is specially designed to perform in high-altitude, low-oxygen environments, enhancing India's air defence in mountainous terrains.

Developed by:

- Defence Research and Development Organisation (DRDO)
- In partnership with Bharat Dynamics Limited (BDL) and Bharat Electronics Limited.
- Objective: To neutralize aerial threats such as drones, enemy aircraft, and cruise missiles at high altitudes, particularly along India's sensitive border areas like Ladakh and Sikkim.

Key Features:

- Altitude Capability: Proven performance at 15,000 ft during trials in Ladakh.
- Seeker Technology: Indigenous active radar seeker ensures precise target lock.
- Mobility: Mounted on mobile platforms for quick, terrain-flexible deployment.
- Guidance: Hybrid system with command guidance + terminal active homing.
- Speed & Range: Travels at Mach 2.5 with a maximum strike range of 30 km.
- All-Weather Performance: Functions reliably in extreme cold and low-density air.
- Kill Probability: 88% (single missile); up to 98.5% in dual-salvo mode.

Significance in Indian Defence:

- High-Altitude Operations: Tailored for India's mountainous border zones (e.g., LAC).
- Boosts Self-Reliance: Entirely indigenous system under Aatmanirbhar Bharat mission.
- Cost-Effective Solution: Saves import costs and enhances local defence production.

Silicon-Perovskite Tandem Solar Cells

Context:

The Union Minister for MNRE, lauded NCPRE's breakthrough in Silicon-Perovskite Tandem Solar Cells with a record 29.8% efficiency, calling it a game-changer for India's solar future.

About Silicon-Perovskite Tandem Solar Cells:

What It Is?

- A tandem solar cell combines two types of solar materials—silicon and perovskite—stacked to absorb different parts of the sunlight spectrum.
- This structure boosts energy conversion efficiency far beyond conventional silicon panels.
- Developed By: Developed by ART-PV India, a startup incubated at IIT Bombay

Key Features:

- 29.8% efficiency in a 4-terminal Silicon/CdTe-Perovskite configuration
- Potential to exceed 30% efficiency, among highest in India
- Lower production cost and superior energy yield per unit area

Applications:

- Rooftop solar systems for urban and rural homes
- Utility-scale solar parks to power smart grids
- EV charging infrastructure powered by high-efficiency solar units

Significance for India:

- Supports India's Aatmanirbhar Bharat mission by building indigenous tech.
- Reduces dependency on imported solar modules, currently dominated by China.
- Positions India as a global leader in next-gen photovoltaic (PV) innovation.

- Aligns with India's Net Zero by 2070 goal through cost-effective clean energy solutions.
- Boosts domestic green tech manufacturing ecosystem with export potential.

ADEETIE Scheme

Context:

Union Minister launched the ADEETIE scheme to boost industrial energy efficiency, especially for MSMEs, at a national rollout event in Panipat, Haryana.

About ADEETIE scheme:

What is ADEETIE?

- ADEETIE stands for Assistance in Deploying Energy Efficient Technologies in Industries & Establishments.
- It is a flagship scheme to promote low-carbon industrial growth by facilitating adoption of clean, efficient energy technologies.
- Launched by: Union Ministry of Power
- Implemented by: The Bureau of Energy Efficiency (BEE)

Budget & Duration:

- Total Budget: 1000 crore (FY 2025–26 to FY 2027–28).
- 875 crore for interest subvention, 50 crore for audits, 75 crore for handholding support.

Core Objectives:

- Promote energy efficiency (EE) in MSMEs to reduce emissions.
- Provide financial assistance and technical support for technology adoption.
- Improve power-productivity ratio and support India's net zero and Viksit Bharat goals.

Key Features:

Interest Subvention:

- 5% for Micro and Small Enterprises
- 3% for Medium Enterprises

Technical Handholding:

- Investment-grade energy audits (IGEA)
- DPR preparation and tech implementation
- Monitoring & verification (M&V) post-installation
- Digital Facilitation: Dedicated portal to track applications and disbursements.

Cluster-Based Rollout:

- Phase I: 60 industrial clusters
- Phase II: 100 additional clusters

Expected Outcomes:

- Up to 50% reduction in energy usage in some technologies.
- 9000 crore investments catalysed, including 6750 crore in MSME loans.

Eligibility Criteria:

- Registered MSMEs in identified clusters/sectors.
- Active participation in energy audits and DPR approval process.
- Preference to early adopters and energy-intensive industries.

TALASH Initiative

Context:

The Ministry of Tribal Affairs and UNICEF India jointly launched TALASH, a national program aimed at fostering holistic development and career clarity among tribal students of Eklavya Model Residential Schools (EMRSs).

About TALASH Initiative:

What is TALASH?

- TALASH (Tribal Aptitude, Life Skills, and Self-Esteem Hub) is a digital platform designed to support tribal students' self-discovery, life skills, and career planning. It is the first national-level initiative focused solely on tribal students' holistic development.
- Launched By: National Education Society for Tribal Students (NESTS) in collaboration with UNICEF India.
- Nodal Ministry: Ministry of Tribal Affairs, Government of India.

Objectives of TALASH:

- Promote self-awareness and personality development among tribal students.
- Enable informed career choices using aptitude-based assessments.
- Build critical life skills such as emotional intelligence, communication, and decision-making.
- Equip EMRS teachers to effectively mentor and guide students.

Key Features:

Psychometric Testing:

- Based on NCERT's Tamanna model.
- Assesses student aptitude; generates personalized Career Cards.

Career Counselling Modules:

- Informs students about career paths suited to their skills.
- Aligns interest–aptitude–aspiration for better decision-making.
- Life Skills & Self-Esteem Training:
- Focuses on confidence-building, conflict resolution, and emotional health.
- Modules promote resilience and value-based growth.

Teacher Training Portal:

- 189 teachers from 75 EMRSs already trained.
- Enables peer-led capacity building across schools.

Phased National Rollout:

- Covers all 1.38 lakh+ students across 28 States & 8 UTs by end of 2025.
- Ensures smooth adoption through city-level pilots.

Significance:

- Empowers tribal youth through technology-driven personalised learning.
- Bridges academic, emotional, and aspirational gaps in tribal education.
- Directly aligns with NEP 2020's vision of holistic, inclusive learning.
- Reaches students even in remote tribal regions through digital innovation.

Order of the Most Ancient Welwitschia Mirabilis

Context:

Prime Minister of India was conferred with Namibia's highest civilian honour, The Order of the Most Ancient Welwitschia Mirabilis, during his state visit to Windhoek.

- He is the first Indian leader to receive this distinction, marking a milestone in India–Namibia bilateral ties.

About Order of the Most Ancient Welwitschia Mirabilis:

What is it?

- A prestigious civilian award named after Welwitschia Mirabilis, a rare and resilient desert plant native to Namibia that can survive for over a thousand years.
- Conferred by: The President of Namibia, currently H.E. Netumbo Nandi-Ndaitwah.

Key Features:

- Symbol of endurance: Reflects the long-lasting and robust nature of Namibia's diplomatic partnerships.
- Rarity & prestige: Reserved for individuals who have made extraordinary contributions to Namibia's global partnerships.
- Cultural symbolism: Emphasises survival, friendship, and the test of time—values deeply embedded in India-Namibia ties.

Importance of Namibia to India:

Strategic Mineral Partnership:

- Namibia holds vast reserves of uranium, rare earths, oil, and copper.
- India is exploring energy and critical mineral cooperation for clean energy transition and strategic security.

Defence and Security Cooperation:

- Bilateral discussions now include security, defence manufacturing, and potential partnerships in maritime domain awareness.
- Namibia joined Indian-led platforms like the Coalition for Disaster Resilient Infrastructure (CDRI).
- Digital and Technological Collaboration: India is supporting UPI-based fintech adoption in Namibia through a technology licensing agreement.
- Health and Human Development: MoUs signed on healthcare, medicine, and entrepreneurship development.
- Conservation and Symbolism: Namibia played a key role in Project Cheetah, aiding India in the transcontinental translocation of cheetahs to Kuno National Park

Model Rules for Felling Trees in Agricultural Lands

Context:

The Ministry of Environment, Forest, and Climate Change (MoEFCC) released Model Rules for Felling Trees in Agricultural Lands (2025) to simplify regulations and boost agroforestry, encouraging farmers to grow trees without legal hurdles.

About Model Rules for Felling Trees in Agricultural Lands:

What are the Model Rules for Felling Trees in Agricultural Lands?

- These rules provide a streamlined framework for registering plantations, felling trees, and transporting timber from non-forest agricultural lands, aligning with the National Agroforestry Policy 2014 and India's climate and SDG commitments.

Key Features of the Model Rules:

1. NTMS Portal Integration: Mandatory registration of tree plantations and harvest requests through the National Timber Management System ensures digital traceability and ease of access.
2. Simplified Tree Felling Process:
   - For <10 trees: Photo uploads and auto NOC issuance.
   - For >10 trees: Online application, field verification, and felling permit generation.
3. State-Level Committee (SLC): A multidisciplinary committee ensures promotion, regulation, and monitoring of agroforestry and timber transport norms.
4. Third-Party Verification System: Empanelled agencies with forestry expertise assess plantations and certify eligibility for felling and transit.
5. Farmer-Centric Record-Keeping: Regular plantation data updates including species count, height, and geotagged photos required to maintain transparency.
6. Technology-Enabled Monitoring: GPS coordinates, Google Earth imaging, and geospatial tools used to verify tree growth and timber projections.
7. Link to Wood-Based Industries: Encourages market connectivity for agroforestry products, ensuring profitability for farmers.
8. Focus on Climate and Soil Resilience: Promotes water conservation, biodiversity, and carbon sequestration, reducing pressure on natural forests.

Issues Surrounding the Rules:

- Portal Development Lag: The NTMS portal is still under development, potentially delaying implementation.
- Digital Literacy Barriers: Farmers with low technical knowledge may find online processes complex.
- Inconsistent State Adoption: Being model rules, states may vary in adoption pace and structure, limiting national uniformity.
- Risk of Exploitation: Without strict oversight, powerful timber lobbies may misuse loopholes for unsustainable logging.

Significance of the Model Rules:

- Boost to Domestic Timber Supply: Helps bridge India's growing timber demand-supply gap (India imports ~$2B worth of wood annually).
- Incentivizes Tree Cultivation: Provides business viability for farmers to integrate high-value trees like sandalwood, teak, poplar, etc.
- Climate Action Support: Enhances India's carbon sink and contributes to Paris Agreement targets.
- Empowers Rural Economy: Creates employment and income streams in tree-based farming sectors, supporting Viksit Bharat 2047 goals.
- Promotes Sustainable Agriculture: Encourages diversified, resilient cropping systems integrating forestry and agriculture.

Conclusion:

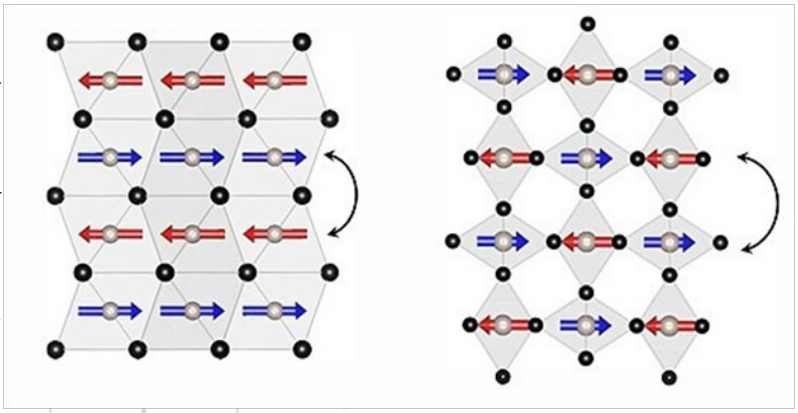
The Model Rules mark a strategic step toward green growth by enabling regulatory ease for agroforestry. However, effective implementation, capacity building, and digital outreach are vital for it to succeed in both ecological and economic terms.

Altermagnet

Context:

Scientists at the S.N. Bose National Centre for Basic Sciences have discovered a rare direction-dependent conduction polarity (DDCP) in Chromium Antimonide (CrSb), a newly discovered altermagnet.

- This is the first known altermagnet to show both p-type and n-type conduction within a single crystal based on direction



About Altermagnet:

What are Altermagnets?

- Altermagnets are a novel class of magnetic materials that combine the internal spin ordering of antiferromagnets with the functional advantages of ferromagnets, yet exhibit zero net magnetization externally.
- Their hidden magnetic symmetry enables unique control over electron spin and transport without external magnetic signatures.
- Discovered By: This specific behaviour in CrSb was discovered by N. Bose National Centre for Basic Sciences, under the Department of Science and Technology, Government of India.

Key Characteristics:

- Zero Net Magnetism: Despite magnetic ordering, they show no external magnetic field like regular magnets.
- High Spin Splitting: Internal electron spin energy levels differ greatly—30× room temperature in CrSb.
- High Thermal Stability: CrSb remains magnetic at temperatures twice that of room temperature, making it viable for industrial electronics.
- DDCP (Direction-Dependent Conduction Polarity): CrSb shows n-type behaviour along layers and p-type behaviour across layers, a first among known magnetic materials.
- Single-Crystalline Purity: High-quality crystals allow precise measurement of anisotropic conduction.

How it Happens?

- In CrSb, when electric current flows within the crystal layers, electrons carry charge (n-type).
- When current flows across the layers, holes (absence of electrons) take over (p-type).
- This unusual conduction behaviour arises from asymmetric spin and charge distribution in the crystal structure.

Applications:

- Spintronics: Enables manipulation of electron spin rather than charge, paving the way for ultra-fast, low-energy memory devices.
- Compact Electronics: Acts as both p-type and n-type, removing the need for separate materials or doping.
- Thermoelectric: Enhances energy efficiency in power conversion systems.
- Simplified Manufacturing: Obviates heterostructures or junctions, reducing cost and complexity.
- Sustainable Tech: CrSb is non-toxic and earth-abundant, aligning with green electronics initiatives.

Chapter-
8

INTERNATIONAL RELATION

India–Taliban 2.0 Engagement

Context:

India held back-to-back high-level meetings with Taliban representatives including Foreign Secretary-level talks and EAM Jaishankar's call with Amir Khan Muttaqi.

- Russia's formal recognition of Taliban adds momentum to India's cautious but deepening engagement.

About India–Taliban 2.0 Engagement:

Geopolitical Context of India–Afghanistan Relations

1. From Hostility to Opportunity: During Taliban's first regime (1996–2001), India faced hostility and Pakistani terror proxies operating from Afghan soil. However, post-2021, the Taliban appears more open to India's engagement, especially as its ties with Pakistan sour.
2. India's Humanitarian Soft Power: India provided $3 billion+ in aid projects: dams, hospitals, Parliament building, and education. It was among the first to send humanitarian relief post-U.S. withdrawal, building goodwill and strategic trust.
3. Pakistan–Taliban Breakdown: India's Strategic Window: Taliban's refusal to curb Tehrik-e-Taliban Pakistan (TTP) has soured its ties with Islamabad. India uses this opening to strengthen bilateral ties and weaken Pakistan's leverage in Afghanistan.
4. India's Multi-Ring Strategy: As per Shafiee's model, Afghanistan lies in India's 'first ring'—the immediate neighbourhood where India aims for strategic primacy to block external influences, especially Pakistan and China.

India's Strategic Interests in Engaging the Taliban

- Counter-Terrorism and Border Security: Taliban's promise to prevent anti-India activities offers India a chance to deny Pakistan a terror foothold via Afghan territory.
- Access to Central Asia via Afghanistan: Afghanistan serves as a geographic bridge to Central Asia. With Pakistan denying overland routes, the Chabahar port and Afghan corridor offer India economic and strategic alternatives.
- Energy Security and Connectivity: Central Asia holds untapped energy reserves. India's expanded connectivity through Afghanistan supports its long-term energy diversification goals.
- Containment of China–Pakistan Axis: Afghanistan provides a counterbalance to the China–Pakistan Economic Corridor (CPEC). A Taliban-friendly India denies Pakistan strategic depth.
- Regional Stability and Indian Security Doctrine: According to Barry Buzan, insulating states like Afghanistan play a role in regional order. A stable, India-engaged Afghanistan helps consolidate a South Asia–centric security framework.

Challenges in Engaging Taliban 2.0:

- Legitimacy Concerns: Taliban remains diplomatically isolated and under UN sanctions. Full recognition remains politically sensitive, especially for democratic India.
- Human Rights and Women's Issues: Taliban's regressive stance on women and minorities presents ethical and diplomatic dilemmas for India.
- Pakistan's Disruption Strategy: India's proactive presence in Afghanistan may escalate proxy conflicts, especially given Pakistan's support for rival factions.
- China's Expanding Footprint: China's investments in Afghanistan and its BRI agenda pose economic competition and security concerns.
- Taliban's Internal Factions: The regime's internal instability and ideological divides complicate negotiations and predictability in India–Afghan ties.

Strategic Calculations: India's Role in Post-2021 Afghanistan

Strategic Objective	India's Approach
Prevent terror spillover	Intelligence and security dialogue with Kabul
Counter Pakistan's influence	Build soft power, align with anti-TTP stance
Improve Central Asia access	Invest in connectivity (Chabahar, Zaranj–Delaram highway)
Assert regional leadership	Actively engage in SCO, Moscow Format, Quad on Afghanistan
Secure development gains	Continue project-based diplomacy and humanitarian aid

Way Forward:

- De Facto Engagement without Recognition: Continue political dialogue and aid while withholding formal recognition until global consensus evolves.
- Layered Diplomacy: Engage Taliban while supporting Afghan civil society, women's rights, and education through indirect channels (e.g., UN, NGOs).
- Regional Security Coordination: Deepen partnerships with Iran, Central Asia, and Russia to counterbalance Taliban volatility and China–Pakistan axis.
- Strategic Use of Chabahar: Expedite infrastructure around Chabahar for seamless transit to Afghanistan and Central Asia.
- Prevent Radicalisation Spillover: Monitor cross-border networks and use intelligence partnerships to prevent infiltration of extremism into India.

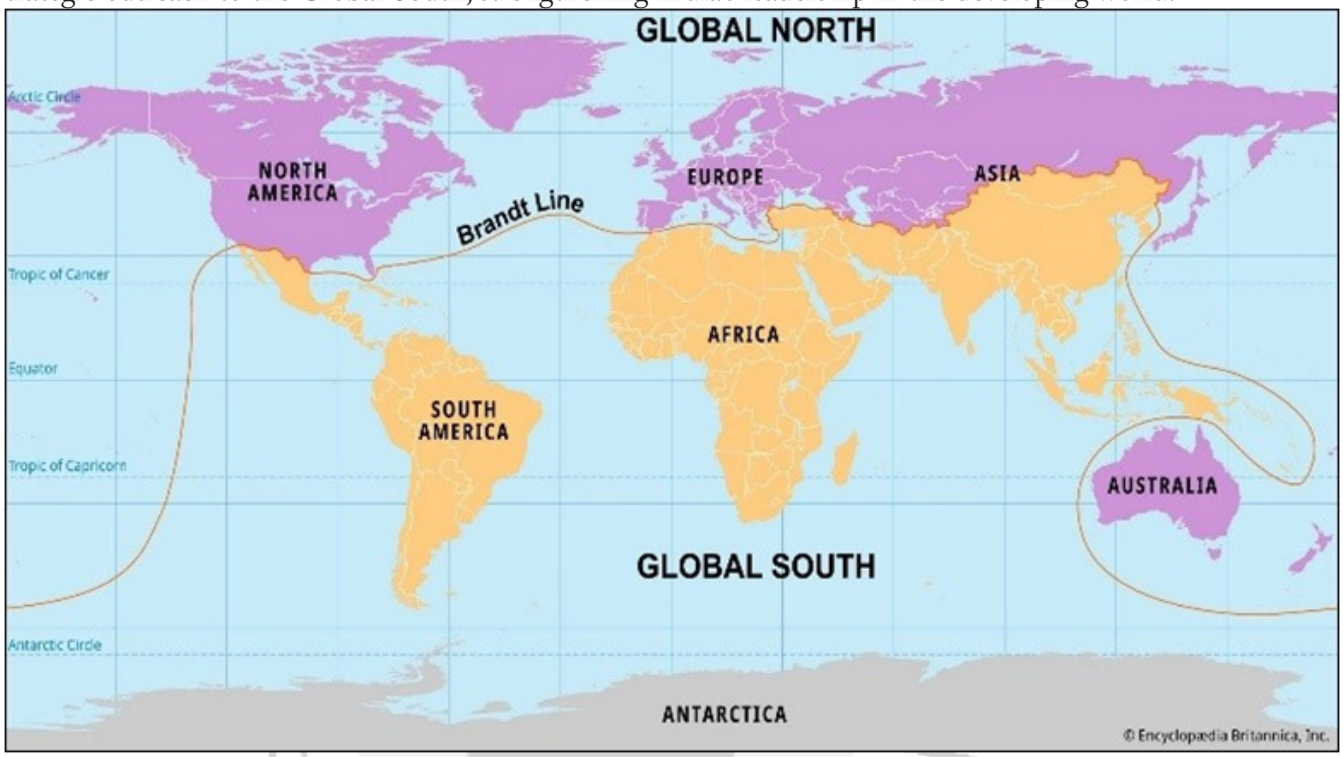
Conclusion:

India's engagement with Taliban 2.0 reflects a strategic shift from idealism to realism. While challenges remain—ranging from human rights to regional rivalries—New Delhi's calibrated diplomacy in Afghanistan aims to safeguard its long-term interests in security, connectivity, and regional leadership. As Afghanistan transforms into a geopolitical crossroads, India must walk the tightrope of engagement with caution, conviction, and consistency.

India & the Global South

Context:

Indian Prime Minister five-nation tour across Ghana, Trinidad & Tobago, Argentina, Brazil, and Namibia marked a strategic outreach to the Global South, strengthening India's leadership in the developing world.



About India & the Global South:

What is Global South?

- The Global South refers to a grouping of developing and emerging countries—mostly in Asia, Africa, Latin America, and Oceania—that share similar developmental challenges and seek greater representation in global decision-making platforms.

Origin:

- The term emerged in the 1960s, first used by Carl Oglesby during the Vietnam War.
- Gained prominence with the Brandt Line (1980), which demarcated the wealthy North from the underdeveloped South.
- Popularised in recent decades due to dissatisfaction with the global governance system, especially after COVID-19, Ukraine war, and climate crises.

Key Characteristics:

- Geographic Fluidity: Not strictly southern—includes countries like India and China in the northern hemisphere.
- Economic & Political Marginalisation: Limited voice in global institutions like UN, IMF, and World Bank.
- Development Priorities: Focused on poverty reduction, food and energy security, climate justice, and equitable trade.
- Institutional Platforms: Represented by G77 (134 countries), Non-Aligned Movement (120 nations), and India-led Voice of the Global South summits.

Key Challenges to the Global South:

- Climate Vulnerability: Developing nations bear the brunt of climate change despite low per capita emissions.
  - o E.g., African nations contribute <4% to global CO_2 emissions but face severe climate shocks.
- Debt Distress: Many nations face external debt burdens, worsened by COVID-19 and global inflation.
  - o E.g., Sri Lanka's economic crisis and Zambia's debt default highlight structural fragility.
- Resource Weaponisation: Strategic minerals like lithium and rare earths are monopolised, limiting access to green energy tech.

- E.g., China controls 70% of rare earth processing globally.
- Digital Inequality: Lack of digital infrastructure widens the AI and fintech divide between North and South.
- Geopolitical Marginalisation: The Global South lacks permanent representation in key global institutions like the UNSC.

India's Role in the Global South:

- Diplomatic Voice: India hosted Voice of the Global South Summits (2023 & 2024) and backed African Union's G20 membership.
- E.g. India's G20 Presidency in 2023 amplified Southern concerns.

Strategic Partnerships:

- Ghana: Rare earth mineral mining, maritime security
- Argentina: Lithium exploration deal via KABIL in Catamarca
- Namibia: UPI fintech rollout, biofuels, and critical minerals
- Brazil: Defence deals, including interest in Akash missile system
- Cultural Diplomacy: PM Modi's addresses to foreign parliaments, yoga promotion, and diaspora engagement boost India's soft power.
- Balanced Foreign Policy: India has hedged its position on Gaza and Iran at BRICS, retaining strategic autonomy while retaining Global South trust.
- Technology & Infrastructure Export: Initiatives like Digital Public Infrastructure (UPI, telemedicine) and support for climate-resilient infra via CDRI are bridging divides.

Way Ahead:

- Champion Multilateral Reform: India must lead efforts for UNSC, WTO, and IMF reforms to reflect Global South aspirations.
- Secure Equitable Mineral Access: India should de-risk mineral supply chains through strategic investments in Africa and Latin America.
- Expand South-South Finance: Use platforms like BRICS Bank and ISA to finance clean energy, tech, and health projects.
- Institutionalise Voice of Global South: Create a permanent Global South forum, led by India, to coordinate positions in global summits.
- Deepen Regional Ties: Strengthen ties with CARICOM, AU, ECOWAS, and Mercosur to promote shared development agendas.

Conclusion:

India's renewed outreach signals its transition from aid receiver to agenda setter in the Global South. Through strategic diplomacy, economic cooperation, and cultural leadership, India is positioning itself as a trusted partner in a multipolar world. This momentum must now translate into lasting institutions and inclusive governance reforms.

9 DISASTER MANAGEMENT

Glacial Lake Outburst Floods (GLOFs)

Context:

Nepal recently witnessed multiple catastrophic GLOF events, including one on July 8, 2025, that washed away a key China-built friendship bridge and crippled hydropower projects.

- This has raised alarm across the Himalayan region, including India, where warming temperatures are increasing the risk of similar events in glacial lake belts of Sikkim, Ladakh, and Uttarakhand.

About Glacial Lake Outburst Floods (GLOFs):

What is a Glacial Lake Outburst Flood (GLOF)?

- A GLOF is the sudden release of water from a glacial lake, often caused by the collapse of moraine or ice dams. These floods are high-velocity and high-volume, posing serious risks to life, infrastructure, and the ecosystem, particularly in the Indian Himalayan Region (IHR).

Causes of GLOFs:

Natural Causes:

1. Glacial Retreat and Lake Formation: Rising temperatures in the Himalayas are accelerating glacial melt, leading to formation of unstable moraine-dammed or supraglacial lakes.

   E.g. India has over 7,500 glacial lakes, many above 4,500 m altitude.

1. Ice or Rock Avalanches: Falling ice or rock into a glacial lake displaces water and causes waves that breach the dam.

   E.g. South Lhonak lake in Sikkim (2023) was destabilized by an avalanche.

1. Heavy Rainfall and Cloudbursts: Sudden, intense rains increase water volume rapidly, stressing moraine dams.

   E.g. Kedarnath GLOF (2013) followed a cloudburst.

1. Seismic Activity: Earthquakes can destabilize loose moraine structures, leading to dam breaches.

   E.g. Uttarakhand is in Seismic Zone IV & V—highly vulnerable.

1. Internal Seepage (Piping): Slow erosion from within moraine dams due to seepage weakens the dam over time.

Anthropogenic Causes:

1. Unregulated Construction: Hydropower and road projects near glacial zones disturb fragile landscapes.

   E.g. Teesta-III Dam was destroyed in 2023 due to lack of buffer zones.

1. Climate Change: Human-induced emissions are accelerating glacial melt rates globally, increasing GLOF events.

   E.g. 2023 and 2024 were the hottest years on record globally.

Types of Glacial Lakes in the Himalayas

1. Supraglacial Lakes: Form on top of glaciers from meltwater. Highly unstable during summer.

   E.g. Seen frequently on Tibetan side, as in the July 2024 Nepal GLOF.

1. Moraine-Dammed Lakes: Form at glacier snouts, dammed by loose debris. Prone to breach due to low cohesion.

   E.g. South Lhonak (Sikkim), Tsho Rolpa (Nepal).

Impacts of GLOFs:

On Human Settlements and Infrastructure:

- Loss of Life: Sudden floods can drown entire villages.
  E.g. Kedarnath (2013) saw hundreds of deaths.
- Damage to Hydropower & Transport: GLOFs damage bridges, roads, dams, and disrupt energy supply.
  E.g. 1200 MW Teesta-III project wiped out in 2023.
- Displacement and Livelihood Loss: Affects agriculture, homes, and leads to economic insecurity.

On Environment and Ecology:

- Riverbed Silting and Course Shifts: Excessive debris raises riverbeds and alters river flow.
  E.g. Teesta riverbed has risen by several metres post-2023 GLOF.
- Habitat Disruption: Biodiversity in alpine and riparian zones gets fragmented or destroyed.
- Long-Term Ecosystem Changes: Persistent sedimentation and changing water regimes reduce ecosystem resilience.

NDMA's 5-Point Strategy to Mitigate GLOF Risks:

1. Hazard Assessment: Identified 195 high-risk glacial lakes and classified them by size, dam type, and downstream vulnerability.
2. AWWS (Automated Weather & Water Stations) Installation: Automated stations in Sikkim relay real-time data every 10 minutes on rainfall, temperature, and water levels.
3. Early Warning Systems (EWS): Manual alerts via ITBP in remote zones; digital multilingual alerts piloted in Uttarakhand and Arunachal.
4. Engineering Interventions: Conducted bathymetry and ERT scans; built artificial channels to safely drain lake water.
5. Community Involvement: Engaged locals in surveys; addressed religious sensitivities to ensure smooth implementation.

India's Measures to Mitigate GLOF Risk:

1. Institutional Mechanisms:

- NDMA's National GLOF Programme: A $20 million initiative targeting 195 high-risk lakes, categorized into 4 risk levels.
- Committee on Disaster Risk Reduction (CoDRR): Brings together States, research institutions, and central agencies for coordinated action.
- 16th Finance Commission Allocation Plan (FY27–31): Scaling up GLOF mitigation as part of climate-resilient infrastructure.

2. Technological Measures:

- SAR Interferometry for Slope Monitoring: Detects micro-changes in glacier slope stability up to centimetre precision.
- Electrical Resistivity Tomography (ERT): Identifies presence of ice-cores in moraine dams, a major failure risk.
- UAV and Bathymetric Surveys: Used to measure lake volume and surrounding terrain vulnerabilities.

3. Community Engagement:

- Involving Local Communities in Expeditions: Ensures cultural sensitivity and local participation in monitoring efforts.
- Manual Early Warning via ITBP: In areas without AWWS, ITBP acts as sentinels for danger signs.
- Expeditions to 40 High-Risk Lakes in 2024: multi-institutional fieldwork done in Ladakh, J&K, HP, UK, Sikkim, and Arunachal.

Conclusion:

Glacial Lake Outburst Floods (GLOFs) are an escalating threat in the Indian Himalayas due to warming temperatures, seismic vulnerability, and unplanned development. India has transitioned from reactive relief to

proactive risk reduction, using tech-driven monitoring and local partnerships. Long-term resilience needs sustained investment in early warning systems, cross-border data sharing, and Himalayan climate adaptation.

Haridwar Stampede

Context:

Eight people died and 30 were injured in a stampede at Haridwar's Mansa Devi temple due to panic triggered by a rumour of a snapped electric line.

About Haridwar Stampede:

What Happened?

A massive crowd of devotees, including children, panicked on a stairway after a rumour about an electric wire snap, leading to a crush and stampede.

Disaster Response:

1. Immediate Response:

Alert & Mobilization:

1. Local authorities (police, temple security) identify the disaster and alert emergency services (SDRF, fire brigade, medical teams).
2. Quick evacuationattempts begin to prevent further casualties.

First Aid & Triage:

1. Injured prioritizedbased on severity (critical cases moved first).
2. Temporary medical campsset up near the site.

2. Rescue & Stabilization:

Search & Rescue:

1. SDRF/NDRF teamsclear debris, assist trapped victims.
2. Crowd dispersalto avoid secondary incidents.

Medical Emergency Handling:

1. Severe cases shifted to hospitals with trauma facilities.

2. Helpline numbersactivated for families to locate missing persons.

Relief & Administration:

Compensation & Support:

1. District Magistrate (DM) declares compensationfor deceased/injured.
2. Shelter & foodarranged for stranded pilgrims.

Magisterial Inquiry Ordered:

1. SDM-led committeeinvestigates cause (crowd mismanagement, rumor spread, infrastructure gaps).
2. Deadline set(e.g., 15 days) for report submission.

4. Long-Term Measures:

Infrastructure Audit:

1. Temple trust & govt. assessstairways, barricades, emergency exits.
2. CCTV & AI-based crowd monitoringproposed if absent.

Policy Reforms:

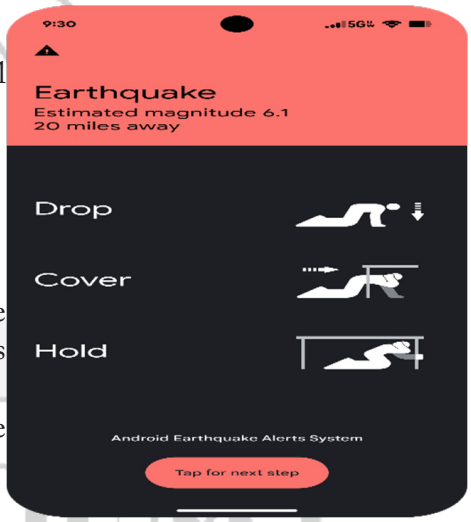
1. Standard Operating Procedures (SOPs) revisedfor major religious gatherings.
2. Public awareness campaignson disaster preparedness.

Relevance for UPSC Syllabus:

- Disaster Management: Stampedes highlight poor crowd control, lack of early warning systems, and gaps in emergency response SOPs.
- Governance: Role of district administration, SDRF, and temple trusts in disaster mitigation.
- Ethics & Accountability: Need for better infrastructure, public awareness, and accountability in religious gatherings.

Android Earthquake Alert System (AEA)

Context:



Google and UC Berkeley's Seismology Lab have released a new global performance report of the Android Earthquake Alert (AEA) system.

- The system issued successful early warnings in 98 countries.

About Android Earthquake Alert System (AEA):

What is AEA?

- AEA is a crowdsourced early warning system that uses the accelerometers in Android smartphones to detect early seismic waves (P-waves) and send alerts before destructive shaking (S-waves)
- Developed By: Developed by Google in collaboration with the Seismology Laboratory of University of California, Berkeley.

How It Works?

- Sensor Activation: Android phones sense initial P-waves using onboard accelerometers.
- Crowdsourcing: Data is sent to Google servers and cross-verified with signals from nearby devices.
- Real-time Processing: If confirmed, servers estimate epicentre, magnitude, and distance.
- Alert Dispatch: Warning is sent to users before S-waves hit, allowing 10–60 seconds of preparation.

Key Features:

Dual Alert Types:

- 'BeAware' for mild shaking
- 'TakeAction' for strong tremors with override alerts
- Global Coverage: Rolled out from the U.S. in 2020 to 98 countries by 2024.

- User Impact: Issued 79 crore alerts and 79% of 1.5 lakh users found alerts highly useful.
- Algorithm Tweaks: Reduced median error in quake magnitude estimates from 0.5 to 0.25.
- Accessibility: Available on all Android devices with opt-in alert settings.

Significance:

- Democratises Disaster Warning: Extends early warning access from 25 crore to 250 crore people.
- Zero-Cost Infrastructure: Utilises existing consumer smartphones—no additional sensors required.
- Time-Sensitive Alerts: Provides crucial seconds for evacuation, safety, or halting transport systems.

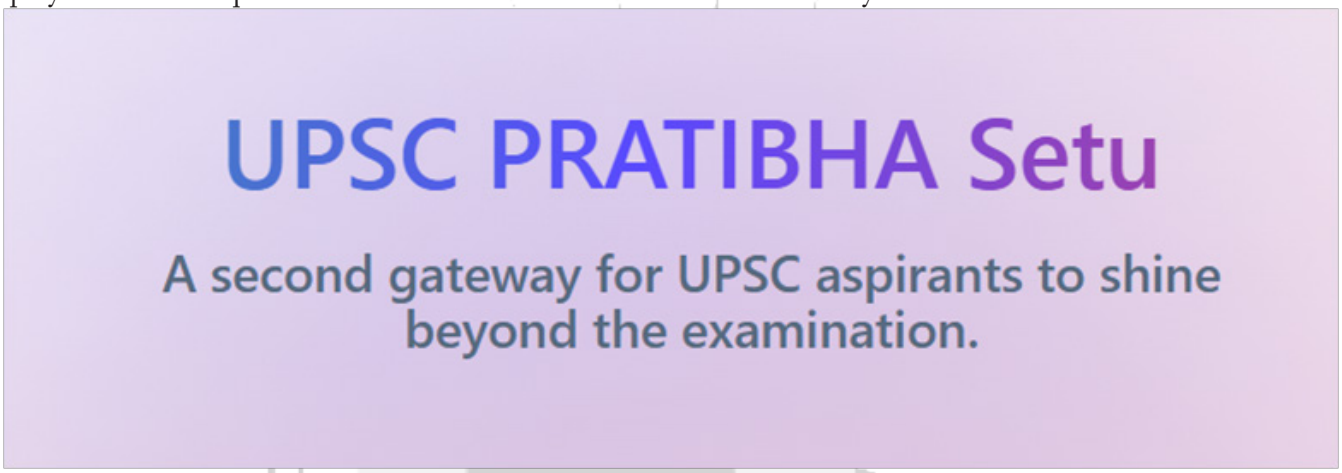
Chapter-
10

SOCIAL SECURITY

UPSC Pratibha Setu

Context:

UPSC has renamed its Public Disclosure Scheme (PDS) to UPSC Pratibha Setu and expanded it to allow private employers to recruit qualified but non-recommended candidates from key examinations.



About UPSC Pratibha Setu:

What it is?

- A public recruitment linkage platform that allows employers to access data of candidates who cleared UPSC written exams but were not recommended after interviews.
- PRATIBHA stands for, Professional Resource And Talent Integration – Bridge for Hiring Aspirants.
- Launched by: Union Public Service Commission (UPSC) in 2018, now renamed from PDS to Pratibha Setu in 2024.
- Objective: To connect meritorious yet non-selected aspirants with job opportunities across PSUs, autonomous bodies, and private sectors.

How It Works?

- UPSC provides details of willing non-recommended candidates (those who cleared written exams but not final selection).
- Registered government, PSU, and private organisations receive login credentials to access the candidate database.
- Organisations can filter candidates using subject-wise and discipline-wise search tools for recruitment purposes.
- Previously only government bodies could access; now private employers are also included, expanding placement scope.

Eligible Examinations Covered:

- Civil Services Examination, Indian Forest Service Examination, Engineering Services Examination, Indian Economic/Statistical Services, Combined Medical Services Examination, CDS Examination, Central Armed Police Forces (ACs), and Combined Geo-Scientist Examination only

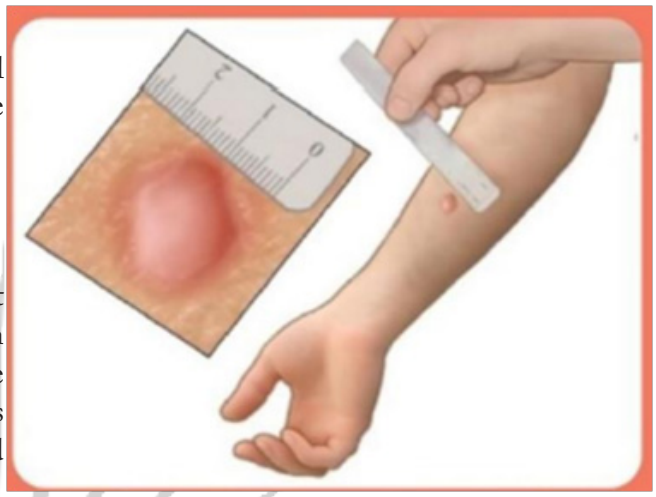
Key Features:

- Merit Recognition: Highlights UPSC-qualified candidates who missed final recommendation.
- Public Visibility: Candidates voluntarily consent to share details with employers.
- Digital Platform: Accessible via UPSC's official portal with secure employer login.

- Employment Linkage: Helps bridge labour market gaps by providing job-matching tools.
- Equity in Opportunity: Ensures skilled candidates are not left out of India's talent pool.

Cy-TB Skin Test

Context:



Kerala has introduced the Cy-TB skin test as a simplified tool for latent tuberculosis infection (LTBI) detection under the National TB Elimination Programme (NTEP).

About Cy-Tb Skin Test:

What it is?

- Cy-TB is a new-generation intradermal skin test developed to detect latent tuberculosis infection (LTBI) in individuals. Unlike traditional tests like the Mantoux test or IGRA blood test, Cy-TB uses specific antigens (ESAT-6 and CFP-10) derived from Mycobacterium tuberculosis.
- Type: Intradermal skin test to detect latent TB infection.
- Developer: Introduced under India's NTEP, supported by state TB units and ICMR.
- Objective: Early detection of dormant TB to prevent progression to active disease.
- Target Group: Adults (18+), especially those in high-risk or contact groups.

How Cy-TB Works?

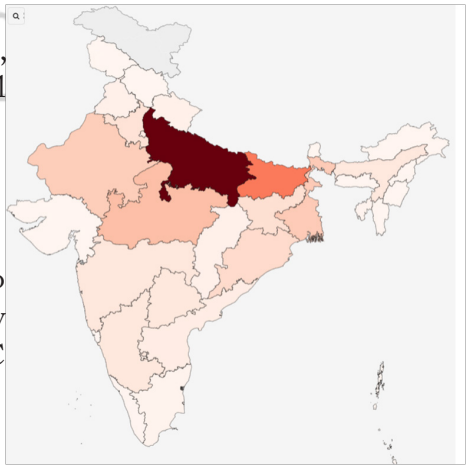
- A 0.1 ml solution containing M. tuberculosis-specific antigens is injected into the skin of the inner forearm.
- If an induration (raised swelling) of ≥5 mm appears in 48–72 hours, it indicates TB infection.
- Unlike Mantoux or IGRA, Cy-TB is more specific, less prone to cross-reaction, and doesn't require blood samples.
- Boosted reactions are also possible in long-latent cases, allowing for reliable follow-up screening.
- The test cannot distinguish between latent infection and active disease but helps identify TB exposure.

Key Features of Cy-TB:

- High specificity: Targets TB-specific antigens, minimizing false positives from BCG or environmental mycobacteria.
- Long shelf life: Multi-dose vials (10 doses) are usable for up to 28 days under refrigeration.
- Simple logistics: Requires no lab equipment and ideal for peripheral or community-level TB screening.
- Fast deployment: Results can be read on-site in 2–3 days; suitable for mass screening.
- Adverse reactions: Mostly mild (itching, swelling); rare events like ulceration are monitored under active safety review.

Dowry Deaths in India

Context:



A surge in dowry-related deaths across states like Uttar Pradesh, Tamil Nadu, and Chandigarh has reignited national concern, revealing persistent social evils and severe justice delivery gaps.

About Dowry Deaths in India:

What are Dowry Deaths?

- Dowry deaths refer to the killing or suicide of a woman due to continuous harassment or violence over unmet dowry demands by her husband or in-laws. It is recognized under Section 304B of IPC and the Dowry Prohibition Act, 1961.

Key Data and Trends (2017–2022):

- Average of 7,000 dowry deaths annually, per NCRB data.
- Over 6,100 murders across India were directly linked to dowry motives.
- Only ~4,500 cases charge-sheeted each year; over 3,000 cases remained under investigation in 2022, with 67% pending for over 6 months.
- Conviction Rate: Merely 100 convictions annually from ~6,500 trial cases.
- Regional Hotspots: 80% of cases concentrated in UP, Bihar, Jharkhand, MP, Odisha, Rajasthan, West Bengal, Haryana.
- Urban Distress: Delhi alone accounted for 30% of dowry deaths among 19 cities.

Kerala's KITE Initiative

Context:

Kerala's KITE initiative has gained national and international attention for ethically integrating Artificial Intelligence (AI) in school education, with UNICEF recognising it as a global best practice in responsible EdTech.

About Kerala's KITE Initiative:

What is KITE?

- Kerala Infrastructure and Technology for Education (KITE) is the technology arm of Kerala's General Education Department. It was established to integrate digital tools and AI in school education while ensuring transparency, inclusion, and teacher autonomy.

Launched by: Government of Kerala

- Objective: To enable ethical, equitable, and open-source-based AI integration in public education; to empower teachers and protect student data sovereignty.

Key Features of the KITE AI Initiative:

- Mass Teacher Training: Trained 80,000+ teachers (Classes 8–12) in critical AI use, including bias detection, privacy concerns, and curricular alignment.
- Free and Open-Source Software (FOSS): Adopted across 15,000+ schools, ensuring autonomy, cost-effectiveness, and transparency in AI tools.
- Samagra Plus AI Platform: Kerala's own RAG-based AI engine curated by expert teachers; aligns directly with state curriculum to avoid test-prep or bias traps.

- Student-Centric Innovation: Little KITEs IT Clubs train students in robotics and AI through hands-on, contextual learning; praised by UNICEF as a global best practice.
- Data Sovereignty & Bias-Resistance: By using in-house infrastructure and open datasets, KITE avoids commercial surveillance models and ensures bias-resistant AI responses.

Dangers of Regionalism

Context:

The Supreme Court of India stated that promoting regionalism for electoral gain is as dangerous as communalism, warning against political parties inciting regional divisions that threaten national unity.

About Dangers of Regionalism:

What is Regionalism?

- Regionalism refers to loyalty or political movement prioritizing a region's interests over national integration.
- It can turn divisive when used for vote-bank politics, undermining unity and constitutional values.

Types and Manifestations:

1. Demand for Autonomy: Eg. Gorkhaland or Bodoland movements.
2. Sub-regional Identity Politics: Maharashtra's "sons of the soil" campaigns.
3. Developmental Disparities: Backward region movements in Telangana, Vidarbha.
4. Language-Based Politics: Anti-Hindi agitations in Tamil Nadu.
5. Employment Preferences: Local job reservations, e.g., Haryana 75% private jobs for locals.

Factors Causing Rise in Regionalism:

- Uneven Development: Lopsided industrial or social growth breeds resentment.
  E.g. Bihar & Jharkhand disparities fueled statehood demands.
- Cultural Assertion: Communities fear cultural extinction due to migration or central policies.
  E.g. Marathi vs. North Indian tension in Mumbai.
- Electoral Mobilization: Political parties fuel regional identity for electoral advantage.
  E.g. Shiv Sena's early campaigns or AIMIM's region-targeted strategies.
- Linguistic Politics: Language often becomes a tool of exclusion or chauvinism.
  E.g. Dravidian movement's roots in linguistic pride.
- Neglected Grievances: Genuine local issues ignored by the Centre or state trigger separatist sentiments.
  E.g. Jammu & Kashmir before Article 370 abrogation.

Issues Associated with Regionalism:

- Threat to National Unity: Encourages fragmentation and undermines the idea of India as one nation.
- Discrimination & Violence: Migrants face hostility—e.g., Bihari workers in Assam or Gujarat.
- Undermines Constitutional Rights: Violates Article 19 – right to reside, settle, or work anywhere.
- Obstructs National Policies: Regional opposition may stall centrally important infrastructure or reforms.
- Encourages Populism over Governance: Identity politics diverts focus from inclusive development.

Way Forward:

- Constitutional Literacy: Promote awareness about fundamental duties and Article 19 protections.
- Balanced Development: Address regional disparities through equitable fiscal allocation.
- National Integration Programs: Strengthen Ek Bharat Shreshtha Bharat, youth exchanges, and civil society dialogues.

- Political Accountability: EC should scrutinize manifestos and speeches for regional or communal polarisation.
- Judicial Vigilance: Courts must continue to check unconstitutional political behaviour and uphold secularism.
- Promotion of Plural Nationalism: Accepting regional identities as part of Indian mosaic, not opposition to it.

Conclusion:

Regional aspirations must not override national unity. The Supreme Court's timely warning calls for mature politics rooted in constitutional values. True federalism thrives not through parochialism but through cooperative nationalism, where diversity strengthens unity.

Maharashtra's Urban Maoism Bill

Context:

The Maharashtra Special Public Security (MSPS) Bill 2025, aimed at curbing left-wing extremist activity in urban areas, was passed in the State Assembly by voice vote.

About Maharashtra Urban Maoism Bill:

- Official Name: Maharashtra Special Public Security (MSPS) Bill, 2025.
- Objective: To prevent unlawful activities by Left-Wing Extremist (LWE) or similar organisations, especially in urban areas.

Features:

- Unlawful Organisation Declaration: Govt can label any group supporting LWE as unlawful.
- Punishable Offences: Membership, fundraising, or aiding such organisations.
- Penalties: 2–7 years' imprisonment and 2–5 lakh fine and offences are non-bailable and cognizable.
- Unlawful Activity Defined: Actions threatening public order or aiding violence.
- Investigation & Oversight: Only DySP and above can probe and advisory board includes retired HC judge and govt pleader.
- Amendments Added: Focus limited to LWE groups, advisory board revised, higher rank mandated for probes.

Untouchability Cases India

Context:

The Ministry of Social Justice and Empowerment's 2022 report revealed that over 97% of cases under the Protection of Civil Rights (PCR) Act—pertaining to untouchability—remain pending in Indian courts, with an alarming acquittal rate.

About Untouchability Cases India:

What are 'Untouchability' Cases Under the PCR Act?

- The Protection of Civil Rights Act, 1955 criminalizes the practice of untouchability, including refusal to serve food, denial of access to religious spaces, schools, and public places.
- It mandates penalties, special courts, and annual reporting on enforcement status.

Trends in the 2022 Government Report:

- Sharp decline in FIRs: Only 13 cases registered in 2022 (vs. 24 in 2021), mainly from J&K, Karnataka, Maharashtra, and Himachal Pradesh.
- High pendency: 1,242 cases pending trial under the PCR Act and 97% pendency rate in courts.
- Poor conviction rate: In 2022, 30 out of 31 cases disposed ended in acquittal and only 1 conviction.

- Low police action: Out of 51 total cases pending with police, chargesheets were filed in just 12.
- No "untouchability-prone" areas were identified by any State or UT—suggesting administrative neglect.
- By contrast, cases under the SC/ST (PoA) Act, 1989 have risen, indicating differential reporting or awareness.

State of Inequality in India

Context:

A recent World Bank report claims that India has one of the lowest inequality levels globally, citing a fall in the Gini coefficient of consumption inequality from 0.288 (2011-12) to 0.255 (2022-23).

- However, multiple studies, including the World Inequality Database, contradict this, pointing to rising income and wealth inequality in India.

Table 1: Gini coefficients for income and wealth in India

Year	Gini Pre-tax income	Gini wealth	Year	Gini Pre-tax income	Gini wealth
2000	0.47	0.7	2012	0.6	0.74
2001	0.48	0.71	2013	0.6	0.74
2002	0.49	0.71	2014	0.61	0.74
2003	0.5	0.71	2015	0.61	0.75
2004	0.51	0.71	2016	0.62	0.75
2005	0.52	0.71	2017	0.63	0.75
2006	0.53	0.73	2018	0.62	0.74
2007	0.55	0.74	2019	0.61	0.74
2008	0.56	0.74	2020	0.6	0.73
2009	0.57	0.73	2021	0.6	0.75
2010	0.58	0.74	2022	0.61	0.75
2011	0.59	0.75	2023	0.61	0.75

1 The low Gini coefficient mentioned by the World Bank relates to consumption inequality, and cannot be compared to levels of income and wealth inequality worldwide

2 Researchers at the World Inequality Database have analysed several sources of data, including national-level surveys, tax records, and published lists of the extremely rich in India, estimating more accurate indicators of inequality

About State of Inequality in India:

Understanding the Types of Inequality:

1. Consumption Inequality:

- Measures differences in spending patterns across households.
- Reported low by World Bank, but generally understates actual inequality.
- India's falling Gini here may reflect greater consumption smoothing, not real income redistribution.

2. Income Inequality:

- Refers to disparities in earnings and wages across individuals or households.
- Gini coefficient for income in India (WID 2023): 0.61, among the highest globally (only 47 countries are more unequal).
- Significantly higher than official estimates due to underreporting in household surveys.

3. Wealth Inequality:

- Captures concentration of asset ownership, like property, shares, or savings.
- India's wealth Gini: 0.75 in 2023 (WID), showing extreme wealth concentration.

Calculating Real Inequality Is Difficult in India:

Survey Limitations:

- Household Consumption Expenditure Surveys (HCES) miss high-income earners and under-report savings and property.
- Methodological differences between 2011–12 and 2022–23 surveys hinder time-series comparison.
- Tax Data Exclusion: Only 6 crore individuals file income tax (CBDT data), leaving out vast informal income sources.
- Lack of Wealth Census: India has no systematic wealth census—data is derived from proxies like Forbes lists, SEBI filings, and real estate prices.
- Underestimation Bias: Richest individuals tend to under-report, and top wealth segments are statistically invisible in sample surveys.

Limitations of the Gini Coefficient:

- Aggregate measure—hides the intensity of concentration.
- Does not show wealth held by top 0.1% or bottom 50%.
- Needs to be supplemented with Top 1% wealth share, P90/P10 ratios, or Theil index.

Implications of High Inequality for India:

- Reduced Economic Mobility: Limits upward movement for bottom 50% of population.
- Lower Aggregate Demand: Savings of the rich do not translate into proportional spending.
- Social Fragmentation: Fuels resentment, political polarisation, and unrest.
- Distorted Policy Outcomes: Excess influence of elite groups on taxation, subsidies, and land use.
- Skewed Growth Patterns: Benefits of GDP growth accrue disproportionately to top 10%.

Constitutional and Policy Context:

- Article 38(2): Mandates state to minimize inequalities in income and opportunities.
- DPSP Article 39(c): Prevents concentration of wealth and means of production.
- Schemes: MGNREGA, PM-SVANidhi, PM-KISAN, JAM Trinity—aim to reduce inequality but suffer from poor targeting and leakage.

Way Ahead:

- Progressive Taxation: Reintroduce wealth and inheritance taxes on ultra-rich to reduce concentration and expand fiscal space.
- Universal Public Services: Increase public investment in health, education, and nutrition to equalize life opportunities.
- Formal Financial Access: Expand low-cost credit access and borrower safeguards to reduce dependence on informal lenders.
- Skilling & Jobs: Align skilling with market demand and promote job-rich sectors to uplift lower-income groups.
- Better Data: Integrate tax, survey, and asset records to publish accurate inequality metrics beyond consumption data.

Conclusion:

Addressing inequality is essential not just for social justice but for sustaining long-term economic growth. India's structural disparities demand bold reforms in taxation, public provisioning, and data transparency. Only inclusive development can ensure equitable prosperity in the decades ahead.

Phase 3 Trials of Its First Indigenous Dengue Vaccine

Context:

India has enrolled over 8,000 participants in Phase 3 trials of its first indigenous dengue vaccine, developed by Panacea Biotec and supported by ICMR.

About Phase 3 Trials of Its First Indigenous Dengue Vaccine:

What Is India's First Dengue Vaccine?

- Name: DengiAll – a tetravalent dengue vaccine designed to protect against all four dengue virus serotypes (DENV-1 to DENV-4).
- Origin: Derived from the TV003/TV005 strain originally developed by the U.S. National Institutes of Health (NIH) and licensed to Indian firms.

Organisations Involved:

- ICMR (Indian Council of Medical Research): Primary funder and scientific lead.
- Panacea Biotec: Vaccine developer holding process patents and leading formulation trials.

How It Works?

- Tetravalent nature: Offers immunity against all four dengue strains, reducing chances of reinfection.
- Live-attenuated virus: Introduces weakened viruses to safely trigger immune response.
- Two-dose vaccine: Participants receive doses followed by two years of medical follow-up to assess efficacy.

Key Features:

- Pan-India Coverage: Trials being conducted at 20 centres including Chennai, Pune, Delhi, Hyderabad.
- Large-Scale Participation: Nearly 80% enrolment completed out of 10,000 targeted candidates.
- Process Patented: Panacea holds proprietary rights over vaccine formulation.
- Previous Trial Success: Phase 1 and 2 completed in 2018–19 with encouraging results.
- Clinical Vigilance: Participants to be monitored for two years post-vaccination

Significance for India:

- Public Health Impact: Addresses one of India's most widespread mosquito-borne illnesses.
- Child Health Focus: Offers critical protection for children, who face higher hospitalisation risk.
- Reduces Repeat Infections: Crucial due to low cross-protection between dengue serotypes.

Chin Refugee

Context:

Over 4,000 refugees from Myanmar's Chin State entered Mizoram's Champhai district in July 2025 after violent clashes between Chin rebel groups.

About Chin Refugee:

Who are the Chins?

- Ethnic Identity: The Chins are an ethnic minority primarily from Myanmar's Chin State, culturally and linguistically aligned with the Mizo people of India.
- Origin: They belong to the broader Zo ethnic group, which includes Mizos (India), Bawms (Bangladesh), and Kuki-Zos (Manipur).
- Physical & Cultural Traits: They share Mongoloid features, speak Tibeto-Burman languages, and follow a mix of Christianity and indigenous customs.

- Socio-political Links: Many Chins are involved in anti-junta resistance movements like CNDF and CDF-H in Myanmar.
- Places in news regarding Chin migration: Zokhawthar (Champhai district), Saikhumphai, Vaphai, Farkawn (Champhai South), and Tiau River crossing points.

Chin-Mizoram Refugee Dynamics:

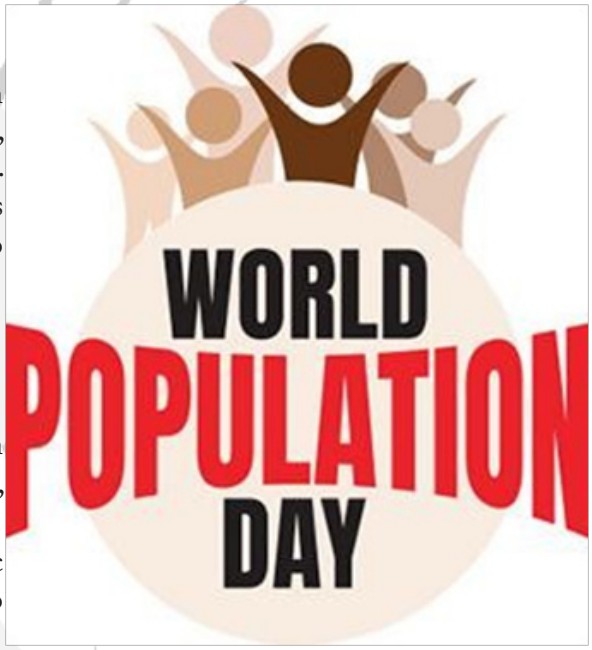
- Ethnic Kinship: Mizoram's majority Mizo population shares deep ethnic and familial bonds with the Chins.
- Cross-border Movement: Free Movement Regime (FMR) permitted traditional mobility but was suspended in 2024 due to rising unrest.
- Host State Response: Mizoram has provided food, shelter, and social support, despite limited central assistance.
- Resource Strain: Villagers and civil bodies now voice concern over resource pressure and illegal trade by refugees.
- Legal Measures: Mizoram seeks Centre's assent for its Household Registers Bill to identify non-citizens amid security fears.

Empowering India's Youth

Context:

The UN's World Population Day 2025 theme focuses on empowering young people to create the families they want, highlighting the need to center youth voices in population policies.

- India, with the largest youth population globally, stands at a crucial moment to convert this demographic into development capital.



About Empowering India's Youth:

India's Demographic Potential:

- Largest Youth Cohort Globally: India has 371 million youth (aged 15–29), the highest in the world (UNICEF), offering a unique edge in the global workforce.
- Demographic Dividend Window: India's demographic dividend (2005–2055) provides a critical window to leverage its young workforce for productivity-led growth.
- Economic Boost Potential: Strategic investment in education, healthcare, skilling, and employment can unlock a $1 trillion GDP boost by 2030 (World Bank & NITI Aayog).
- Labour Market Advantage: India's young working-age population provides a counterbalance to ageing societies like Japan and Europe, enhancing its outsourcing and manufacturing competitiveness.
- Urbanisation & Innovation Driver: A young demographic fuels entrepreneurship, digital adoption, and urban transformation, crucial for India's leap towards a knowledge-based economy.

Challenges Hindering Demographic Gains:

- Limited Reproductive Autonomy: NFHS-5 shows 36% face unintended pregnancies, while 30% report unmet fertility aspirations, indicating lack of informed choice.
- Child Marriage & Teenage Pregnancies: Despite a 50% drop since 2006, 23.3% girls still marry before 18; teenage pregnancies remain high at 7%, with regional disparities.
- Gender Inequality in Employment: India's female labour force participation rate is below 25%, curbing economic independence and delaying empowerment.
- Socio-cultural Barriers: Deep-rooted gender norms, stigma around SRHR (sexual and reproductive health and rights), and poor awareness limit youth agency.
- Poor Access to Services: Access to contraception, maternal care, and SRHR education remains uneven, especially in rural and underserved areas.

Key Government and Civil Society Initiatives:

Project Udaan (Rajasthan, IPE Global):

- Prevented 30,000 child marriages and 15,000 teen pregnancies through schooling incentives and contraceptive access (2017–2022).

Project Advika (Odisha, UNICEF-UNFPA):

- Enabled 11,000 child marriage-free villages and stopped 950 child marriages in 2022 via youth-led awareness and leadership training.

Project Manzil (Rajasthan):

- Trained 28,000 young women (18–21 years) in government centres; 16,000 gained employments, delaying early marriages and boosting financial agency.
- Beti Bachao Beti Padhao and National Adolescent Health Programme:
- Focus on reducing adolescent fertility and enhancing awareness of reproductive rights.

Way Forward:

- Ensure Rights-Based SRHR Access: Universalise access to contraceptives, safe abortion, infertility care, and mental health support.
- Expand Girls' Education: Each additional year of secondary education reduces child marriage probability by 6% (UNICEF).
- Focus on Skill & Job Alignment: Adopt human-centred design in skilling programs; ensure access to dignified, gender-friendly jobs to raise female workforce participation.
- Invest in Structural Support Systems: Improve access to housing, childcare, workplace flexibility, and transport safety to enable youth aspirations.
- Behavioral Change Campaigns: Target social norms through community engagement, media, and school-based life skills education.
- Decentralised Implementation: Encourage state-led innovations and support district-level planning based on local data and youth profiles

Conclusion:

India's development hinges on how it treats its youth—not merely as numbers but as agents of change. Empowering young people with information, skills, and economic agency will convert population pressure into national progress. Ensuring choice, control, and capital for every adolescent, especially girls, is the most sustainable investment in India's future.

Special Intensive Revision (SIR)

Context:

The Supreme Court began hearing petitions challenging the Election Commission of India's (ECI) Special Intensive Revision (SIR) of electoral rolls in Bihar, raising constitutional and procedural concerns ahead of the upcoming assembly polls.

About Special Intensive Revision (SIR):

- Definition: A Special Intensive Revision involves door-to-door verification of electoral rolls through house-to-house enumeration.
- Legal Basis: Conducted under Section 21(3) of the Representation of the People Act, 1950, and Article 324 of the Constitution, empowering ECI for electoral roll supervision.
- Hybrid Nature: Combines features of both intensive and summary revisions, requiring additional documentation in selected cases.

Why is Special Revision Needed?

- Duplicate Entries: Rapid migration, urbanisation, and dual enrolment have inflated electoral rolls (ECI, 2025).
- Political Complaints: Accusations of voter roll manipulation in states like Maharashtra necessitated re-verification (e.g. Rahul Gandhi's allegation).
- Long Gap Since Last Intensive Revision: Bihar's last SIR was in 2003; outdated records can compromise electoral integrity.
- Foreign Nationals Concern: In border states like Bihar, earlier EC records highlight infiltration risks requiring proof-based verifications.
- Electoral Transparency: SIR seeks to enhance voter roll credibility before high-stakes elections, especially in politically sensitive states.

How Does the SIR Process Work?

- Enumeration Forms: BLOs distribute pre-filled forms to each household with voter details and seek updated documents.
- Proof of Citizenship: Voters, especially those enrolled after 2003, must now submit documents like birth certificates or parents' proof.
- Verification by EROs: Electoral Registration Officers decide on inclusion/deletion, with powers to refer doubtful cases under Citizenship Act, 1955.
- Massive Scale: In Bihar alone, over 8 crore voters are being re-verified using 1 lakh BLOs and 4 lakh volunteers.
- Timeline Pressure: The entire revision is expected to be completed by July 25, just months ahead of the Assembly elections.

Arguments Supporting the SIR:

- Constitutional Mandate of ECI: Under Article 324, ECI has plenary powers to ensure free and fair elections (SC: Mohinder Singh Gill case, 1977).
- Duplicate Roll Cleanup: Migration and multi-location enrolment threaten electoral integrity; SIR helps sanitize rolls.
- Precedent Exists: SIRs were conducted earlier in 1952–2004, especially post-state reorganisation or major demographic shifts.
- Tech-Enabled Transparency: Use of digitised databases, photos, and GPS-based records enhances monitoring and reduces human error.
- Political Neutrality Claim: ECI states all parties were notified and asked to appoint Booth Level Agents (BLAs) to observe the process.

Arguments Against the SIR:

- Burden Shift on Citizens: Unlike past practice, the burden of proof now lies on voters, not objectors (contradicts Rule 18, Registration of Electors Rules).
- Arbitrary Post-2003 Divide: Only voters enrolled after 2003 face strict checks—an illogical cutoff lacking legal precedent.
- Disenfranchisement Risk: In Seemanchal and flood-prone areas, voters without birth certificates may be excluded despite Aadhaar or EPIC.
- Procedural Irregularities: Field complaints include wrong addresses (e.g., "cremation ground"), missing names, and blank entries in Muzaffarpur.
- Political Timing & Selective Targeting: Conducted only in Bihar before polls—opposition alleges manipulation to benefit ruling alliance.

Way Ahead:

- Clarify Citizenship Documentation: Government must notify an official citizenship proof under the Citizenship Act to avoid ambiguity.
- Broaden Accepted Documents: Include Aadhaar, Voter ID, Ration Card, MNREGA card—especially for the marginalised and rural voters.

- ECI's Own Precedents Must Guide Practice: Reinstate 2003-style inclusive enumeration without added burdens.
- Judicial Oversight Post-Election: As per Mohinder Singh Gill, courts can review post-election actions, safeguarding electoral justice.
- Uniform, All-India Revision: Avoid selective targeting; if needed, conduct SIR nationwide to maintain fairness and political neutrality.

Conclusion:

The Bihar SIR presents a complex intersection of constitutional powers, voter rights, and administrative discretion. While electoral roll accuracy is critical, due process and citizen dignity must remain central. A balanced, transparent, and inclusive approach is vital for upholding democratic integrity.

1- Rising in Unison: Realizing Sahkar SE Samriddhi

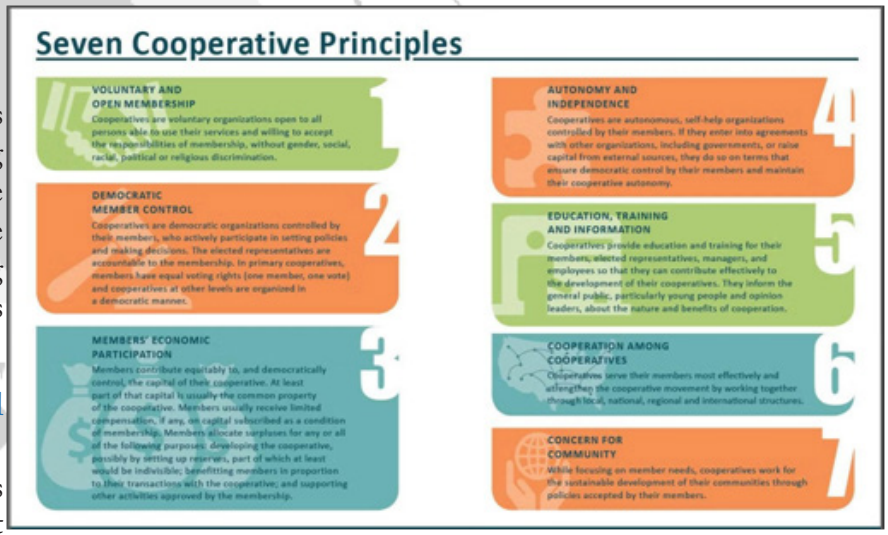
Cooperation, based on 'Sah' (together) and 'Karya' (action), holds transformative potential for communityled growth. As India targets a $5 trillion economy, cooperatives must be repositioned as democratic, multisectoral business entities. The vision of "Sahkar Se Samriddhi" demands unified, time-bound efforts for inclusive socio-economic development.

Philosophical Roots and Historical Evolution

- India's ancient texts—Rigveda, Manusmriti, and Arthashastra—emphasize collective trusteeship. The Rigveda advocates unity: "May we be of one mind…". Arthashastra mandates shared responsibility in cooperatives.
- The Cooperative Credit Societies Act, 1904 formalized grassroots economic cooperation. Mahatma Gandhi called Charkha the "greatest voluntary cooperation," linking it to self-reliance and rural empowerment.

Cooperative Values and Principles

Indian cooperatives function on 7 global principles—voluntary membership, democratic control, economic participation, autonomy, education, inter-cooperation, and community focus. These foster people-centric development.



Status of the Cooperative Movement

- India has 814,575 cooperatives with 29 crore members, covering 98% of villages. Over 810,000 are Primary Cooperatives, and 19 are national-level federations, making this a critical pillar of India's economy.

PACS: Strengthening Rural Cooperatives

Primary Agricultural Credit Societies (PACS) in 32 States/UTs can now conduct 25+ business activities, including: Fisheries, Dairy, Warehousing, Banking, Insurance, Legal Services, Renewable Energy Initiatives, PM Bhartiya Janaushadhi Kendras (PMBJKs), Common Service Centres (42,080 PACS, 300+ e-services) and Fertilizer & Panchayat-level Maintenance Services

Additional Initiatives: As part of the ongoing cooperative sector reforms, 7.43 lakh RuPay Kisan Credit Cards (KCCs) have been distributed under the Gujarat pilot, 716 Primary Agricultural Credit Societies (PACS) are now functioning as Pradhan Mantri Bhartiya Janaushadhi Kendras (PMBJKs), 36,193 PACS have been converted into Kisan Samriddhi Kendras, and 286 PACS have applied for Oil/LPG dealership, further strengthening rural service delivery and financial inclusion.

Cooperatives Driving Atmanirbhar Bharat

To reduce pulse and maize imports, GoI launched:

- e-Samyukti portal (NCCF): 12.64 lakh farmer registrations
- e-Samridhi portal (NAFED): 6.75 lakh registrations
- These portals ensure MSP procurement, boost income security, and promote ethanol production under the Ethanol Blending Programme.

Promoting Cooperative FPOs and FFPOs

Strategic integration of Farmer Producer Organizations (FPOs) and Fishery Farmers Producer Organizations (FFPOs) within the cooperative framework has enhanced income diversification and rural entrepreneurial capacities. The National Cooperative Development Corporation (NCDC) has successfully formed:

- 730 cooperative FPOs
- 70 FFPOs (initial phase)

Expansion into Oil and Energy Sector

PACS are now eligible for:

- Retail Petrol/Diesel and LPG Dealerships
- Participation in MNRE renewable energy schemes
- Promotion of solar pumps and PV modules on farms

Strengthening the Cooperative Credit Structure

With 13 crore farmers linked to PACS, GoI is modernizing the 3-tier credit system:

- StCB DCCB PACS
- Focus on computerizing ARDBs, SCARDBs, and PCARDBs
- Strengthening DCCBs (middle tier) to ensure credit efficiency

Cooperative Education and Skill Building

- The establishment of Tribhuvan Sahkari University institutionalizes cooperative learning, promoting leadership, professionalism, and sustainability in the sector.

Conclusion

As India moves toward Viksit Bharat@2047, the cooperative movement is key to achieving inclusive and equitable development. The vision of "Sahkar Se Samriddhi" is a national call-to-action for grassroots entrepreneurship, self-reliance, and social equity.

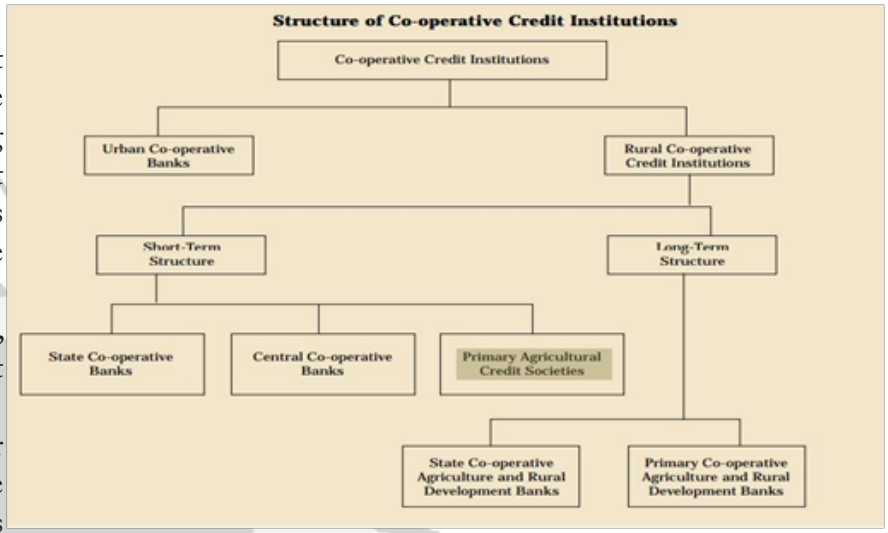
Strengthening cooperative institutions, enabling multi-sectoral participation, and aligning them with national missions can turn cooperatives into engines of prosperity—ensuring that growth reaches the last mile through the spirit of collective action.

2- PACS as Common Service Centers (CSCS)

Rural India has long relied on Primary Agricultural Credit Societies (PACS) as the backbone of its agricultural credit system. With over 1 lakh PACS spread across the country and catering to more than 13 crore farmer members, these institutions form one of the largest cooperative networks globally.

- Traditionally, their role has been limited to providing short-term and medium-term credit to farmers. However, the evolving needs of rural India—spanning digital inclusion, e-governance, financial literacy, and access to basic services—necessitate a broader institutional transformation.
- In this context, the integration of PACS into the Common Service Centers (CSC) framework represents a pivotal policy shift toward inclusive, digitally-enabled rural development.

What are PACS?



- Definition: PACS are the lowest tier in the short-term cooperative credit structure (comprising PACS at the village level, District Central Cooperative Banks (DCCBs), and State Cooperative Banks (StCBs)).
- Role: They offer agricultural credit, fertilizers, seeds, and procurement services.
- Structure: Registered under respective State Cooperative Societies Acts, PACS operate as memberdriven institutions, democratically governed and financially supported by cooperative banks and NABARD.
- Challenges: Manual record-keeping, limited diversification, lack of digitization, and poor governance hampered their efficiency.

PACS-CSC Integration: A Policy Shift

Recognizing their deep rural penetration, the Government signed an MoU on 2nd February 2023 between the Ministry of Cooperation, Ministry of Electronics & IT, NABARD, and CSC e-Governance Services India Ltd to integrate PACS into the Digital Seva Portal of CSCs.

This initiative transforms PACS into one-stop service hubs, offering 300+ e-services, such as:

- Banking, insurance & digital payments
- Aadhaar updation, PAN card & passport services
- Rail, bus, and air ticket bookings
- Health services (e.g., telemedicine, diagnostics)
- e-Commerce access for both purchasing and marketing rural produce
- Legal literacy & investor awareness
- Government scheme enrollments (e.g., DBT, welfare registrations)
- Online education, skilling & vocational training

Advantages of the Transformation

- Empowering Farmers Beyond Credit: The transformation reduces dependence on intermediaries by facilitating direct access to markets and government schemes. It promotes financial inclusion through digital banking and faster loan disbursement, while enhancing awareness and decision-making among members via targeted education and information services.
- Strengthening Governance and Efficiency: The adoption of ERP systems, cloud storage, CAS, and MIS has enabled real-time integration with higher cooperative banks, ensured transparency and financial accountability, and strengthened disaster resilience by ensuring continuity through digital infrastructure.
- Facilitating Inclusive Development: As digital service hubs, PACS-CSCs deliver welfare and e-governance services in remote areas, operate on a sustainable pay-per-use model, and foster collaborative networks

across cooperatives to enable best practice exchange and capacity building.

Case Studies of Transformation

- Maharashtra – Kharsai Vividha Karyakari Society: Transitioned from manual to digital systems, resolving issues like data inaccuracy and inefficiencies. Full-scale ERP adoption enhanced transparency, reduced workload, and improved member satisfaction—demonstrating the potential of digital modernization in rural cooperatives.
- Tamil Nadu – Arakandanallur PACS, Villupuram: Despite severe flood damage, the society ensured uninterrupted services through prior partial computerization and cloud-based data access. This highlights the resilience and disaster-readiness of digitally enabled PACS.
- Implementation Priorities: To ensure the success of the PACS-CSC transformation, it is essential to strengthen HR capacity, training, and administrative systems, focus on welfare delivery through e-PACS, and promote digital and financial literacy. Additionally, building cooperative ecosystems for innovation and best-practice sharing, along with ensuring financial sustainability through service-based revenue models, are critical for long-term impact.

Conclusion

The computerization and integration of PACS into the CSC framework is not just a digital upgrade—it is a transformative strategy aimed at revitalizing India's rural cooperative institutions. By combining financial services with e-governance, skilling, and healthcare, PACS are being reimagined as multi-functional, community-centric institutions. This reform aligns with the vision of 'Sahkar Se Samriddhi', strengthening rural prosperity through cooperative development.

Through enhanced transparency, accountability, and service delivery, the PACS-CSC model will play a central role in building a digitally empowered, economically resilient, and inclusive rural India—in sync with the larger goals of Digital India, financial inclusion, and cooperative federalism.

3- NCDC: Powering India's Cooperative Revolution

The National Cooperative Development Corporation (NCDC) has emerged as a key driver of India's cooperative resurgence, playing a pivotal role in rural transformation through support to cooperative sugar mills, Farmer Producer Organizations (FPOs), Fish Farmer Producer Organizations (FFPOs), and marine fishing cooperatives. As India pushes for inclusive economic growth, NCDC's proactive financial and technical interventions have strengthened grassroots economic institutions.

About NCDC

- The National Cooperative Development Corporation (NCDC), a statutory body under the Ministry of Cooperation, was established in 1963 under the NCDC Act, 1962 to promote the cooperative movement and rural economic development.
- It supports farmer cooperatives by financing activities like agricultural marketing, processing, storage, cold chains, and input supply.
- NCDC also promotes non-farm cooperative sectors such as dairy, handloom, sericulture, poultry, and fisheries, with a focus on SCs, STs, and women cooperatives. It implements various Central Sector Schemes, aiming to empower cooperatives and drive inclusive and sustainable rural growth.

Key Achievements and Highlights

- Financial Outreach and Growth: In FY 2024–25, NCDC disbursed 95,175.71 crore benefiting 2.76 lakh cooperative societies and 1.27 crore members, achieving a net profit of 750 crore with zero NPAs and a loan recovery rate of 99.76%. Cumulative disbursement till March 2025 stood at 4.08 lakh crore, marking a 33% CAGR since 2015–16. The disbursement target for FY 2025–26 is 80,000 crore.
- Support to Cooperative Sugar Mills (CSMs): A one-time grant of 1,000 crore was provided by the Ministry of Cooperation, enabling NCDC to sanction

and release 10,000 crore to 56 cooperative sugar mills for ethanol production, cogeneration units, and working capital, thereby enhancing rural employment and operational viability.

- Promotion of Farmer Producer Organizations (FPOs): Under the Formation and Promotion of 10,000 FPOs Scheme, NCDC formed 1,863 FPOs, including the targeted 1,100 additional FPOs, and disbursed 165.37 crore to FPOs and Cluster-Based Business Organizations (CBBOs) to strengthen collective farming and market linkages.
- Development of Fish Farmer Producer Organizations (FFPOs): Under the Pradhan Mantri Matsya Sampada Yojana (PMMSY), NCDC formed 70 new FFPOs and converted 1,000 existing fisheries cooperatives, disbursing 77.07 crore. Under the new PM Matsya Kisan Samriddhi Sah-Yojana (PMKSSY), a target has been set to transform 2,348 fisheries cooperatives into FFPOs to boost the blue economy.
- Marine and Coastal Development Initiatives: Through the Deep-Sea Trawlers Initiative, NCDC sanctioned 11.55 crore in Maharashtra (14 trawlers) and 18 crore in Gujarat (30 trawlers). It also sanctioned 37.39 crore to Rajmata Vikas Macchimar Sahkari Sanstha, Mumbai, for a seafood processing unit, and 32.69 crore (20.83 crore released) for the Integrated Fisheries Development Project in Kerala to improve marine infrastructure and processing capacity.

Significance

The NCDC plays a critical role in rural economic empowerment by enabling small farmers, fishers, and rural entrepreneurs to access affordable credit, infrastructure, and market linkages. It directly contributes to the goal of doubling farmers' income through value addition, ethanol production, and collective marketing.

- By supporting weaker sections such as SCs, STs, and women via cooperative-led models, it promotes inclusive development. NCDC also encourages sustainable practices like eco-friendly fisheries and community resource management. Its initiatives are well-aligned with the Ministry of Cooperation's vision of "Sahkar se Samriddhi."

Challenges and Way Forward

Despite its achievements, the cooperative sector faces regional disparities, inadequate digital infrastructure at the PACS and FPO levels, and a lack of trained cooperative leadership.

- To address these gaps, there is a need to strengthen human resources and digital systems, promote multi-purpose PACS through the Common Services Centre (CSC) model, and expand credit access to non-agricultural cooperatives. Additionally, ensuring transparency, accountability, and proper fund utilization is crucial for sustaining long-term cooperative growth.

Conclusion

The NCDC has firmly positioned itself as a cornerstone of India's cooperative growth strategy. Its financial prudence, technical capacity, and grassroots engagement have helped it become a model public financial institution. As the cooperative sector expands into newer domains like ethanol production, digital agriculture, and blue economy, NCDC's role will remain crucial in making cooperatives vibrant, sustainable, and self-reliant.

4- Multi-State Cooperative Societies (Amendment) Act, 2023

The cooperative movement has played a pivotal role in India's rural and agricultural development, promoting self-reliance, collective action, and inclusive growth. Recognizing the need for reform in multi-state cooperative societies (MSCS), the Government of India enacted the Multi-State Cooperative Societies (Amendment) Act, 2023, a comprehensive legislation to improve governance, transparency, and accountability in the cooperative sector.
Background and Rationale

- The Ministry of Cooperation, established on 6th July 2021, aims to realize the vision of "Sahkar se Samriddhi" by providing an exclusive policy, legal, and administrative framework for cooperatives.
- Widespread issues such as financial mismanagement, delayed elections, lack of transparency, and weak grievance redressal in MSCS prompted legislative intervention.
- The original MSCS Act, 2002, lacked adequate safeguards to address emerging challenges, making amendments imperative.

Salient Features of the MSCS (Amendment) Act, 2023

- Cooperative Election Authority (CEA): Established under Section 45 to ensure timely, regular, and transparent elections in Multi-State Cooperative Societies (MSCS). As of April 2025, it has conducted

113 elections and 33 more in progress, with proactive coordination for election preparedness.

- Grievance Redressal Mechanism: Provision for Cooperative Ombudsman under Section 85A and Cooperative Information Officers (CIOs) under Section 106 to handle member grievances, ensure accountability, and improve information transparency.
- Financial Transparency and Accountability: Introduction of Concurrent Audit (Sec 70A) for societies above a defined turnover threshold to detect fraud early. Audit reports of apex MSCS to be tabled in Parliament. Central Government empowered to define auditing standards and prudential norms for thrift and credit societies.
- Ethical Governance: Mandatory Audit and Ethics Committee and POSH Committee (Prevention of Sexual Harassment) for each MSCS board. Stricter disqualification norms for directors and expulsion period extended from 1 year to 3 years (Section 30).
- Social Inclusion: Ensures mandatory representation of 1 SC/ST and 2 women members on MSCS boards in line with Article 243ZJ, promoting social justice, inclusivity, and gender equity.
- Digitization and Ease of Doing Business: Enables digital filing of applications, returns, and fees. Registration timeline reduced from 4 months to 3 months, with a 2-month extension for correcting deficiencies.
- Professional Leadership: Defines minimum eligibility criteria for appointment of Chief Executive Officers (CEOs) to ensure qualified and capable leadership.
- Enhanced Regulatory Oversight: Authorizes the Central Registrar to conduct inquiries into fraudulent or illegal activities. Updates investment norms by eliminating colonial-era instruments and adopting modern financial standards.

Significance:

- Democratic Governance: Ensures free, fair, and timely elections in Multi-State Cooperative Societies (MSCS) through the Cooperative Election Authority (CEA).
- Transparency & Accountability: Introduces real-time audits, public disclosures, and digital filing to promote good governance.
- Inclusive Growth: Empowers Scheduled Castes (SCs), Scheduled Tribes (STs), women, and rural communities through mandatory board representation and cooperative leadership.
- Ease of Doing Business: Simplifies registration timelines, enables online submissions, and reduces compliance burdens.
- Grievance Redressal: Institutionalizes a robust Ombudsman framework and Cooperative Information Officers (CIOs) for member protection.
- Policy Alignment: Reinforces the Ministry of Cooperation's vision of "Sahkar se Samriddhi", linking cooperatives with rural empowerment and economic justice.

Challenges

- Capacity Gaps: Need for training and upskilling of MSCS officials, CIOs, and elected board members.
- Digital Divide: Uneven digital infrastructure across regions limits access and efficiency.
- Regional Disparities: Wide gaps in cooperative penetration and performance, especially in eastern and northeastern India.

Way Forward

- Training & Sensitization: Conduct targeted capacity-building programmes for CIOs and cooperative boards.
- Digital Expansion: Ensure last-mile digital connectivity, especially for rural and tribal cooperatives.

- CSC Model Integration: Promote multi-purpose PACS as Common Service Centres (CSCs) to offer government-to-citizen (G2C) services.
- Strengthened Oversight: Establish robust monitoring and evaluation (M&E) mechanisms for fund utilization and service delivery outcomes.

Conclusion

The MSCS (Amendment) Act, 2023 marks a transformational step in revamping India's cooperative landscape. By embedding transparency, democratic functioning, financial prudence, and social equity, it lays a robust foundation for making cooperatives a vibrant engine of rural development and economic empowerment. For UPSC aspirants, this amendment is a critical reform in governance, rural economy, and policy execution, with far-reaching implications for inclusive growth.